

K1 HEATER & AIR CONDITIONER

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K1-1

1 COOLING UNIT

1-1 REMOVAL AND INSTALLATION

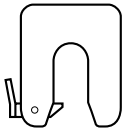
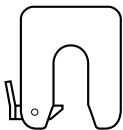
CAUTION

- Refer to the NOTES ON SERVICING SRS AIRBAG SYSTEM

Refer to Page A1-41.

1-1-1 ARTICLES TO BE PREPARED

SST

| Shape | Part No. | Part name |
|---|-----------------|----------------------|
|  | 09870-00015-000 | Remover, quick joint |
|  | 09870-00025-000 | Remover, quick joint |

Lubricant, adhesive, others

Compressor oil (ND—OIL8)

1-1-2 OPERATION BEFORE REMOVAL

1. After turning the IG SW to LOCK, disconnect the negative battery terminal and wait at least 90 seconds.

2. Drain refrigerant.

Refer to TERIOS SERVICE MANUAL

3. Drain the coolant.

Refer to TERIOS SERVICE MANUAL

4. Remove the panel S/A, instrument.

Refer to TERIOS SERVICE MANUAL

5. Remove the computer Ay, fuel injection .

Refer to TERIOS SERVICE MANUAL

6. Remove the transmission control computer Ay. (A/T vehicles)

Refer to TERIOS SERVICE MANUAL

7. Remove the computer Ay, transponder key.(vehicles with immobilizer)

Refer to TERIOS SERVICE MANUAL

8. Remove the receiver, door control.(vehicles with keyless entry system)

Refer to TERIOS SERVICE MANUAL

9. Remove the amplifier Ay, air conditioner.

Refer to Page K1-14.

10. Remove the computer Ay, power steering.(vehicles with EPS)

Refer to Page G2-12.

11. Remove the column Ay, steering.

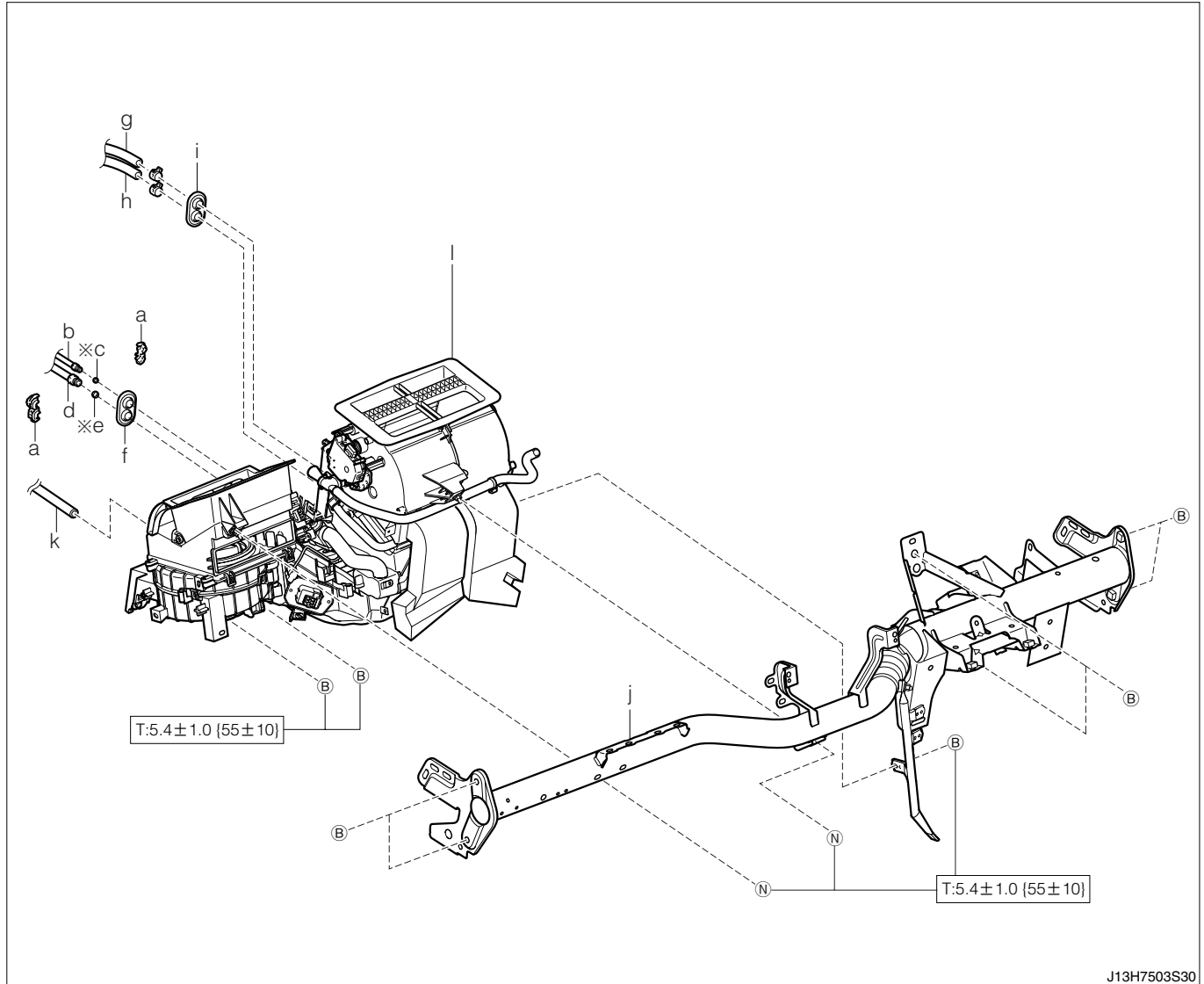
Refer to Page G1-1.

12. Remove the column Ay, electric power steering.(vehicles with EPS)

Refer to Page G1-1.

1-1-3 REMOVAL AND INSTALLATION PROCEDURES

(1) Components



※: Non-reusable parts

Unit: N·m{kgf·cm}

(2) Removal and installation procedures

- | | |
|--|--|
| ▼ ▲ 1 a Clamp, piping | ▲ 7 g Hose, water |
| 2 b Tube & accessory Ay, air conditioner | ▲ 8 h Hose, water, No. 2 |
| 3 c Ring, O | 9 i Grommet heater |
| 4 d Hose,suction | ▼ ▲ 10 j Reinforcement S/A, instrument panel |
| 5 e Ring, O | ▲ 11 k Hose, drain cooler |
| 6 f Grommet, cooler, No.1 | ▼ ▲ 12 l Unit Ay, air conditioner |

J13H7503S30

K1-3

1-1-4 POINTS OF REMOVAL

(1) clamp, piping.

1. Using the SST, remove the clamp, piping.

SST: 09870-00015-000

09870-00025-000

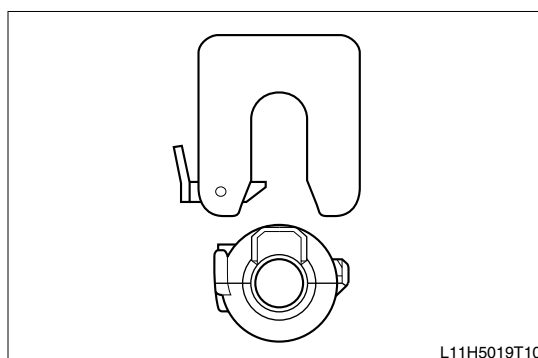
WARNING

- When removing the clamp piping, first ensure that the pressure inside the refrigerant cycle is 0MPa {0kgf/cm²}. If gas remains, it may blow out, resulting in injuries such as frostbite.

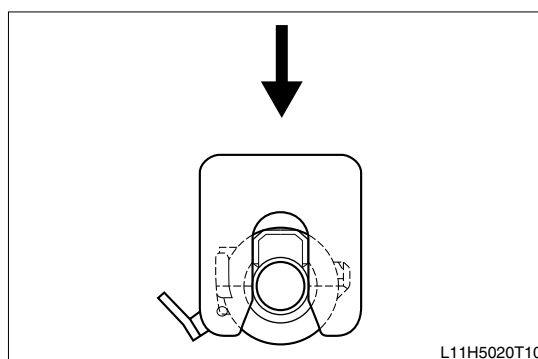
CAUTION

- The use of tools other than the SST may cause damage to the clamp. Therefore, be certain to employ the SST.

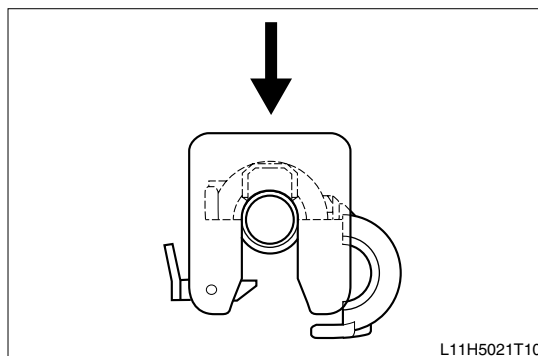
- (1) Prior to the use of the SST, confirm the correct direction in using the tool.
- (2) The two claws of the SST must be inserted into the hole of the clamp.



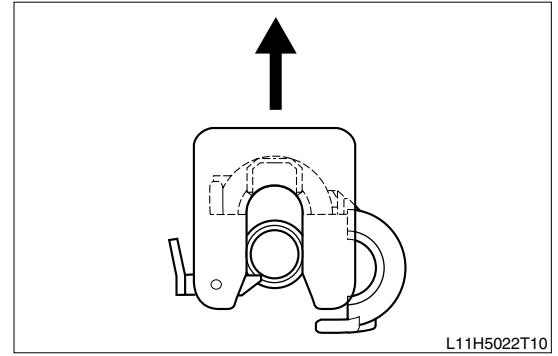
- (3) Insert the SST.



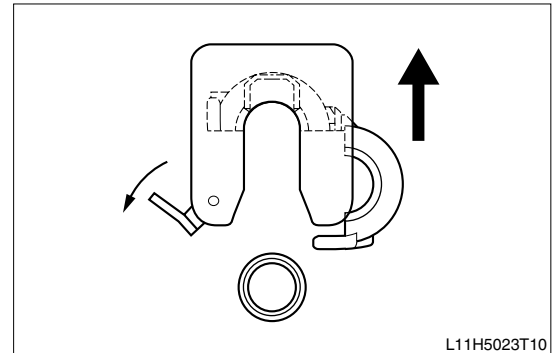
- (4) Ensure that the clamp, piping is released.



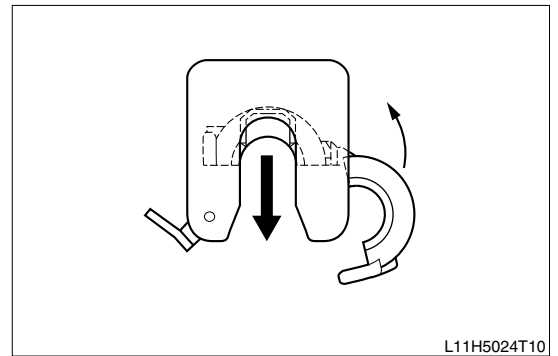
- (5) Pull up the SST and then disconnect the clamp from the pipes.



- (6) While pushing the lock release lever pushed, pull out the SST from the pipes.

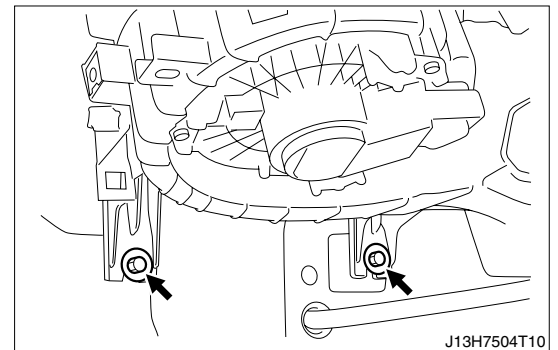


- (7) Take out the clamp, piping from the SST.



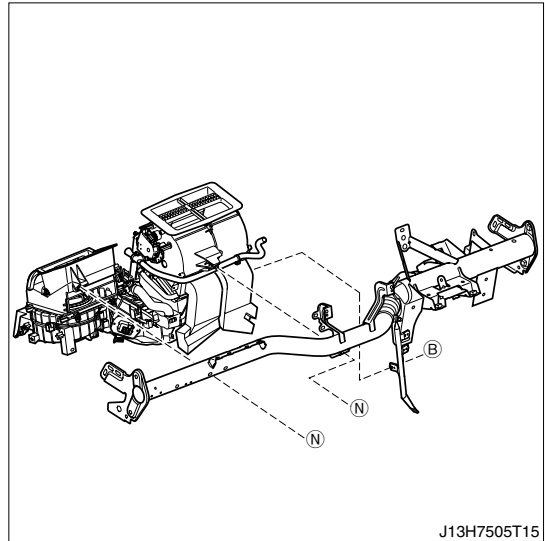
(2) Reinforcement, instrument panel, unit Ay, air conditioner

1. Remove 2 bolts from the inside of the vehicle.
2. Disconnect the harnesses and clamps, etc. from the instrument panel reinforcement S/A and the air conditioner unit Ay.
3. Slide the instrument panel reinforcement S/A, with the air conditioner unit Ay attached, vehicle rear side from the front pillar section.



K1-5

4. Remove the nuts (two locations) and the bolt (one location), and then remove the air conditioner unit Ay from the instrument panel reinforcement S/A.
5. Open the front passenger side door fully, and remove the instrument panel reinforcement S/A from the vehicle.



1-1-5 POINTS OF INSTALLATION

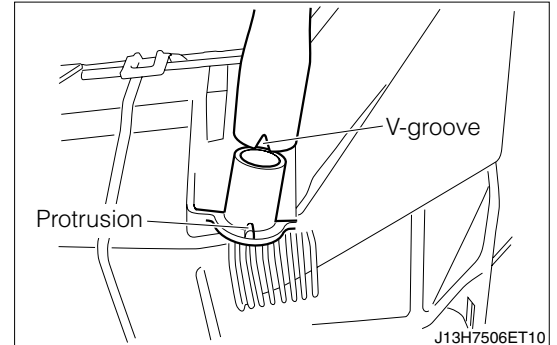
(1) Reinforcement, instrument panel, unit Ay, air conditioner

- When replacing the unit Ay, replenish the compressor oil with the amount of oil specified below.

| Parts to be replaced | Unit Ay |
|--|---------|
| Compressor oil replenishment amount (cc) | 25 |

LUBRICANT: Compressor oil (ND – OIL8)

- Temporarily place the air conditioner unit Ay inside the vehicle.
- Connect the cooler drain hose to the air conditioner unit Ay.



NOTE

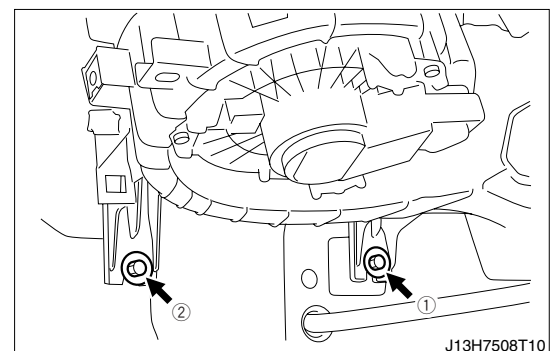
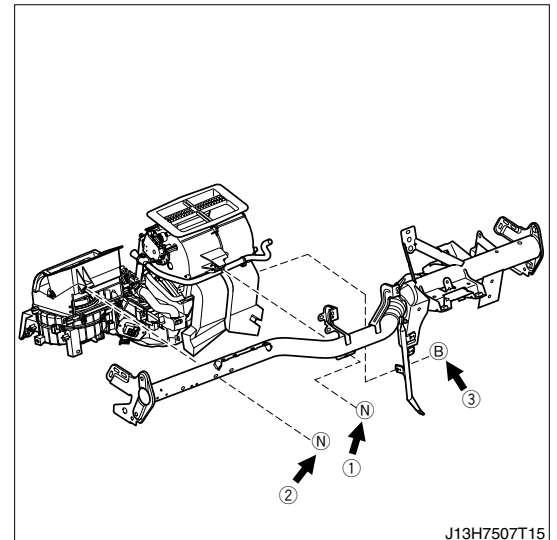
- Align the V-shaped groove of the cooler drain hose with the protruding section of the air conditioner unit Ay.

- Attach the air conditioner unit Ay to the instrument panel reinforcement S/A.

- Be sure to tighten the bolt (one location) and the nuts (two locations) securely, in the sequence ①→②→③.

- Attach the instrument panel reinforcement S/A and the air conditioner unit Ay to the dash panel.

- Slide the instrument panel reinforcement S/A, with the air conditioner unit Ay attached, vehicle front side to the front pillar section, and install them.
- Connect the instrument panel reinforcement S/A to the front pillar section.
- Be sure to tighten the bolts (two locations) that connect the air conditioner unit Ay and the dash panel securely, in the sequence ①→②.



K1-7

(2) Hose, water and Hose, water, No.2

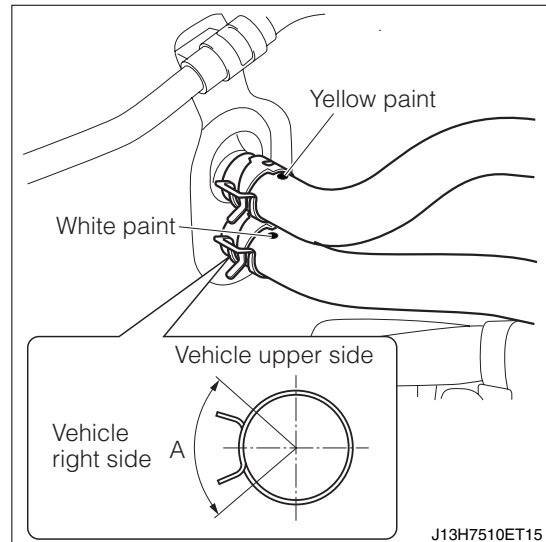
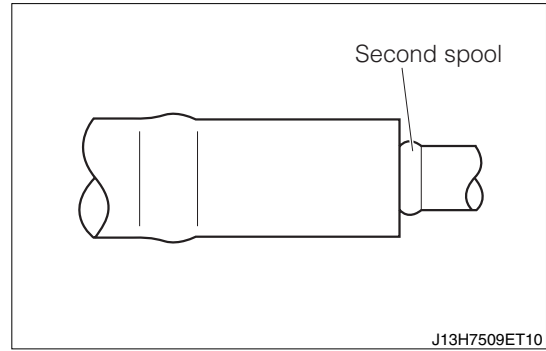
1. Connect the water hose and the No.2 water hose.
 - (1) Install the hoses with the paint marks facing up.

CAUTION

- Be sure to insert the hoses until they are positioned just before the second spool.
- (2) Attach the claw of clip in mating range of A(90°) as shown in the figure.

CAUTION

- Align the edge of the paint mark with the edge of the clip, and then secure the hoses.

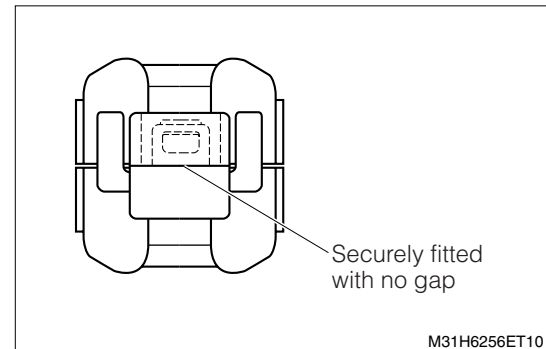


(3) Clamp, piping

1. Ensure that the clamp is fitted securely.

NOTE

- After completion of the assembly, the clamp may move, if turned. this, however, is not a defect.



1-1-6 OPERATION AFTER INSTALLATION

1. Install the column Ay, electric power steering.(vehicles with EPS)

Refer to Page G1-1.

2. Install the column Ay, steering.

Refer to Page G1-1.

3. Install computer Ay, power steering.(vehicles with EPS)

Refer to Page G2-12.

4. Install the amplifier Ay, air conditioner.

Refer to Page K1-14.

5. Install the receiver, door control.(vehicles with keyless entry system)

Refer to TERIOS SERVICE MANUAL

6. Install the computer Ay, transponder key.(vehicles with immobilizer)

Refer to TERIOS SERVICE MANUAL

7. Install the transmission control computer Ay. (A/T vehicles)

Refer to TERIOS SERVICE MANUAL

8. Install the computer Ay, fuel injection.

Refer to TERIOS SERVICE MANUAL

9. Install the panel S/A, instrument.

Refer to TERIOS SERVICE MANUAL

10. Connect the negative battery terminal.

11. After turning the IG SW to ON, confirm that the airbag warning lamp goes out after approximately 6 seconds.

12. Pour in the coolant

Refer to TERIOS SERVICE MANUAL

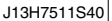
13. Replenish the refrigerant.

Refer to TERIOS SERVICE MANUAL

1-2-1 OPERATION BEFORE DISASSEMBLY

- Refer to Page K1-1.**

(1) COMPONENTS



(2) Disassembly and assembly procedures

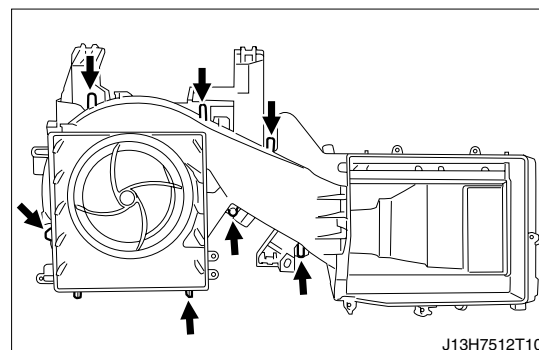
- | | |
|---|--|
| 1 a Duct Ay, air | ▲ 11 k Thermistor Ay (Evaporator temperature sensor) |
| 2 b Power transistor Ay, air conditioner | 12 l Servo & accessory Ay (for mode) |
| 3 c Motor Ay, w/fan | 13 m Lever (for mode) |
| ▲ 4 d Case S/A, blower (for inside/outside air) | 14 n Duct S/A, air |
| 5 e Servo & accessory Ay (for inside/outside air) | 15 o Servo & accessory Ay (for air mixture) |
| 6 f Lever (for inside/outside air) | 16 p Lever (for air mixture) |
| 7 g Door S/A (for inside/outside air) | 17 q Door S/A (for mode) |
| 8 h Core S/A, heater | 18 r Door S/A (for air mixture) |
| ▲ 9 i Case, heater (UPR) | ▲ 19 s Case S/A, blower (MID) |
| 10 j Evaporator S/A | ▲ 20 t Case S/A, blower (LWR) |

1-2-3 POINTS OF ASSEMBLY**(1) Case S/A, blower (LWR), Case S/A, blower (MID)**

- If the case is to be re-used, use the screws supplied as replacement parts in addition to those already being used. Tighten them in the positions (seven locations) indicated in the illustration.

NOTE

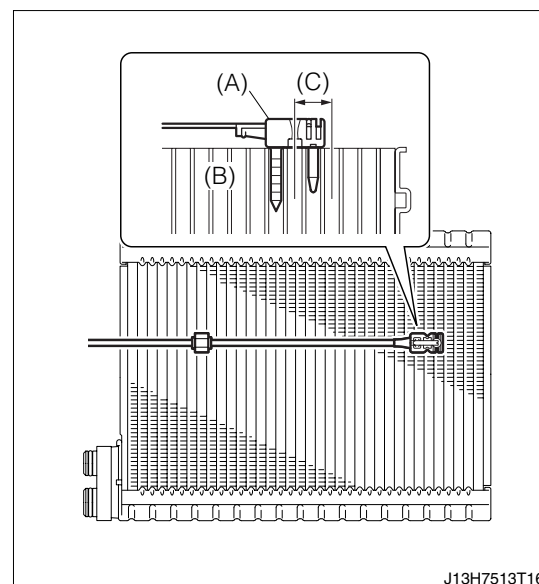
- Screw part number: 90099—00968

**(2) Thermistor, cooler (evaporator temperature sensor)**

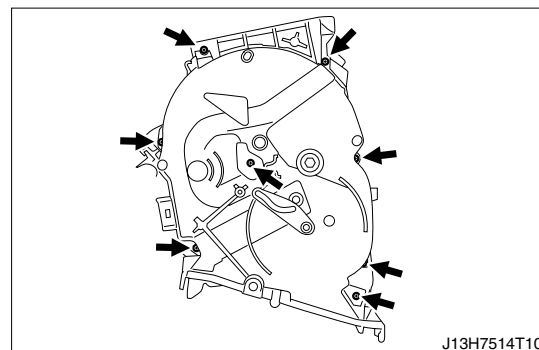
- Attach the cooler thermistor in the position indicated in the illustration.

CAUTION

- When installing the cooler thermistor, insert it into a hole to the immediate left or right of the existing insertion hole. (within the range of C)
- After inserting the cooler thermistor, do not apply excessive force to the lead wire.
- Insert the resin case of the cooler thermistor(A) directly into the evaporator S/A(B) until it comes into contact with the bottom of the evaporator S/A.

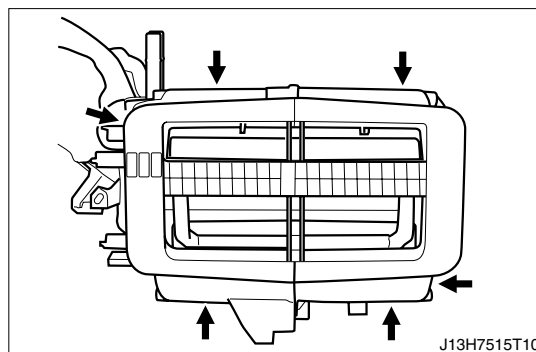
**(3) Case, heater (UPR)**

- Tighten the screws (eight locations) in the positions indicated in the illustration.



K1-11

2. Tighten the screws (six locations) in the positions indicated in the illustration.

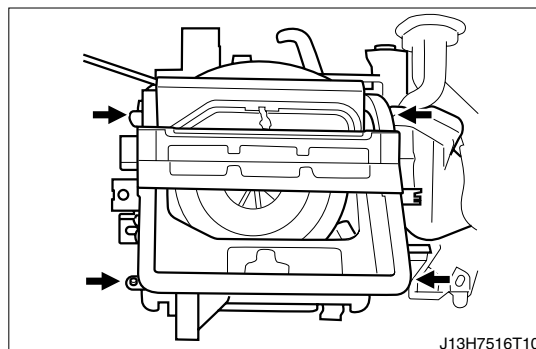


(4) Case, S/A blower (for inside/outside air)

1. If the case is to be re-used, use the screws supplied as replacement parts in addition to those already being used. Tighten them in the positions (four locations) indicated in the illustration.

NOTE

- Screw part number: 90099—00968



1-2-4 OPERATION AFTER ASSEMBLY

1. Install the unit assy, air conditioner.

Refer to Page K1-1.

2. Connect the negative battery terminal.
3. After turning the IG SW to ON, confirm that the airbag warning lamp goes out after approximately 6 seconds.

2 EXPANSION VALVE

2-1 REMOVAL AND INSTALLATION

2-1-1 ARTICLES TO BE PREPARED

Lubricant, adhesive, others

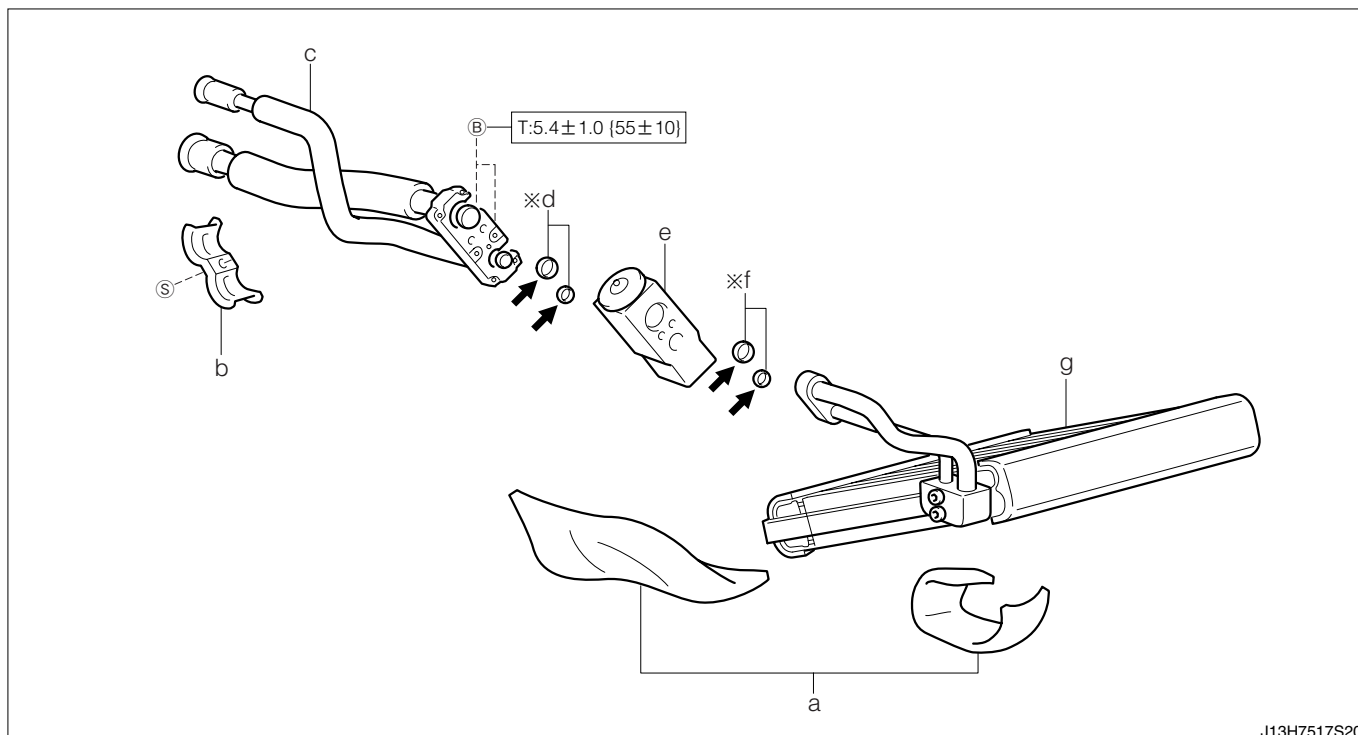
Compressor oil (ND – OIL8)

2-1-2 OPERATION BEFORE REMOVAL

1. After turning the IG SW to LOCK, disconnect the negative battery terminal and wait at least 90 seconds.
2. Remove the unit assy, air conditioner.
Refer to Page K1-1.
3. Remove the Case, heater (UPR).
Refer to Page K1-9.

2-1-3 REMOVAL AND INSTALLATION PROCEDURES

(1) Components



➡: Compressor oil (ND – OIL8)

※: Non-reusable parts

Unit: N · m {kgf · cm}

(2) Removal and installation procedures

- | | | | | | |
|-----|---|--------------------------|---|---|----------------|
| 1 | a | Packing, cooler, No.1 | 6 | f | Ring, O |
| 2 | b | Clamp | 7 | g | Evaporator S/A |
| ▼ 3 | c | tube & accessory Ay, air | | | |
| 4 | d | Ring, O | | | |
| 5 | e | Valve, expansion | | | |

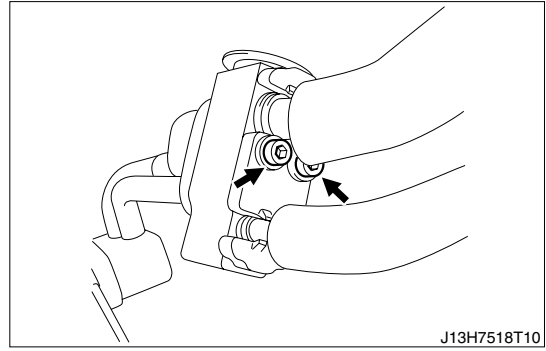
J13H7517S20

K1-13

2-1-4 POINTS OF REMOVAL

(1) tube & accessory Ay,air

1. Remove the bolts (two), using a hexagon bit socket wrench, and remove the air tube & accessory Ay.



2-1-5 OPERATION AFTER INSTALLATION

1. Install the Case, heater (UPR).

Refer to Page K1-9.

2. Install the unit assy, air conditioner.

Refer to Page K1-1.

3. Connect the negative battery terminal.

4. After turning the IG SW to ON, confirm that the airbag warning lamp goes out after approximately 6 seconds.

3 AIR CONDITIONER AMPLIFIER

3-1 REMOVAL AND INSTALLATION

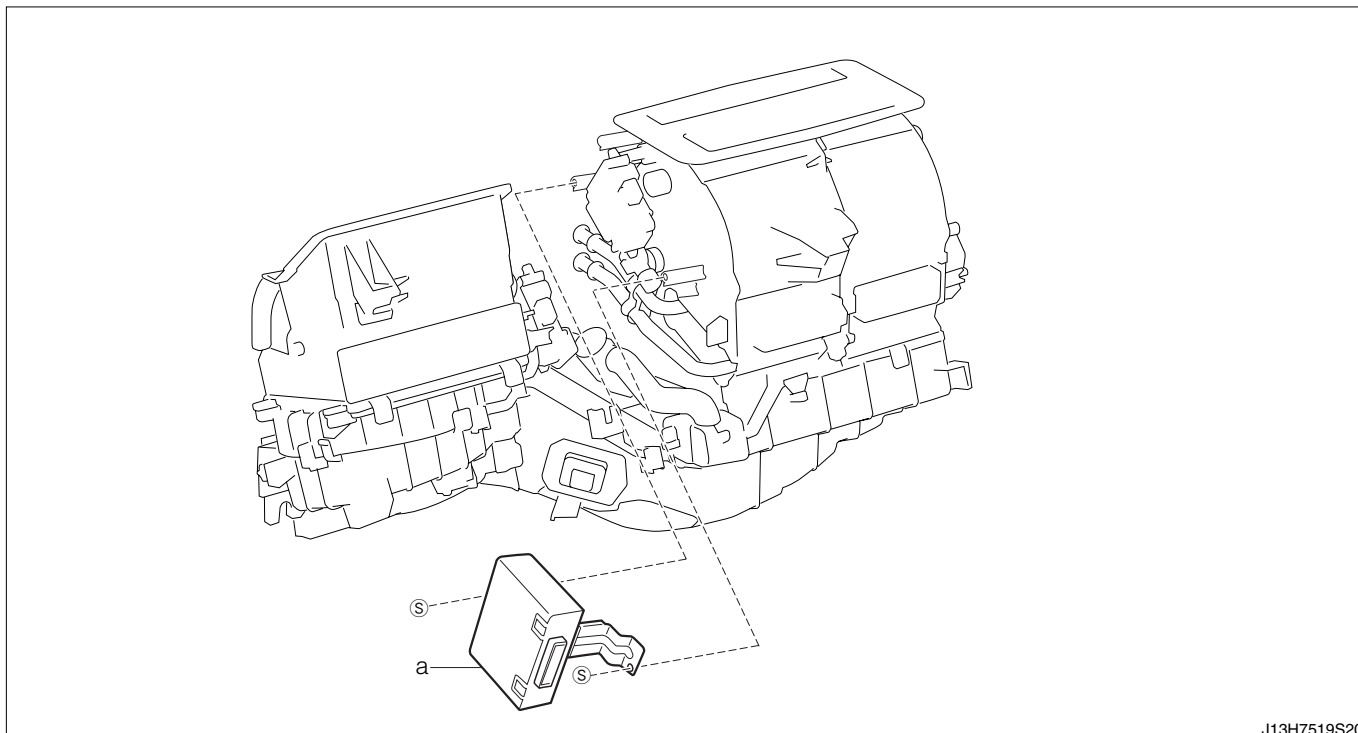
3-1-1 OPERATION BEFORE REMOVAL

1. Set the IG SW to LOCK, disconnect the negative battery terminal.
2. Remove the glove compartment door Ay.

Refer to TERIOS SERVICE MANUAL

3-1-2 REMOVAL AND INSTALLATION PROCEDURES

(1) Components



J13H7519S20

(2) Removal and installation procedures

- 1 a Amplifier Ay, air conditioner

3-1-3 OPERATION AFTER INSTALLATION

1. Attach the glove compartment door Ay.

Refer to TERIOS SERVICE MANUAL

2. Connect the negative battery terminal.

4 BLOWER MOTOR

4-1 REMOVAL AND INSTALLATION

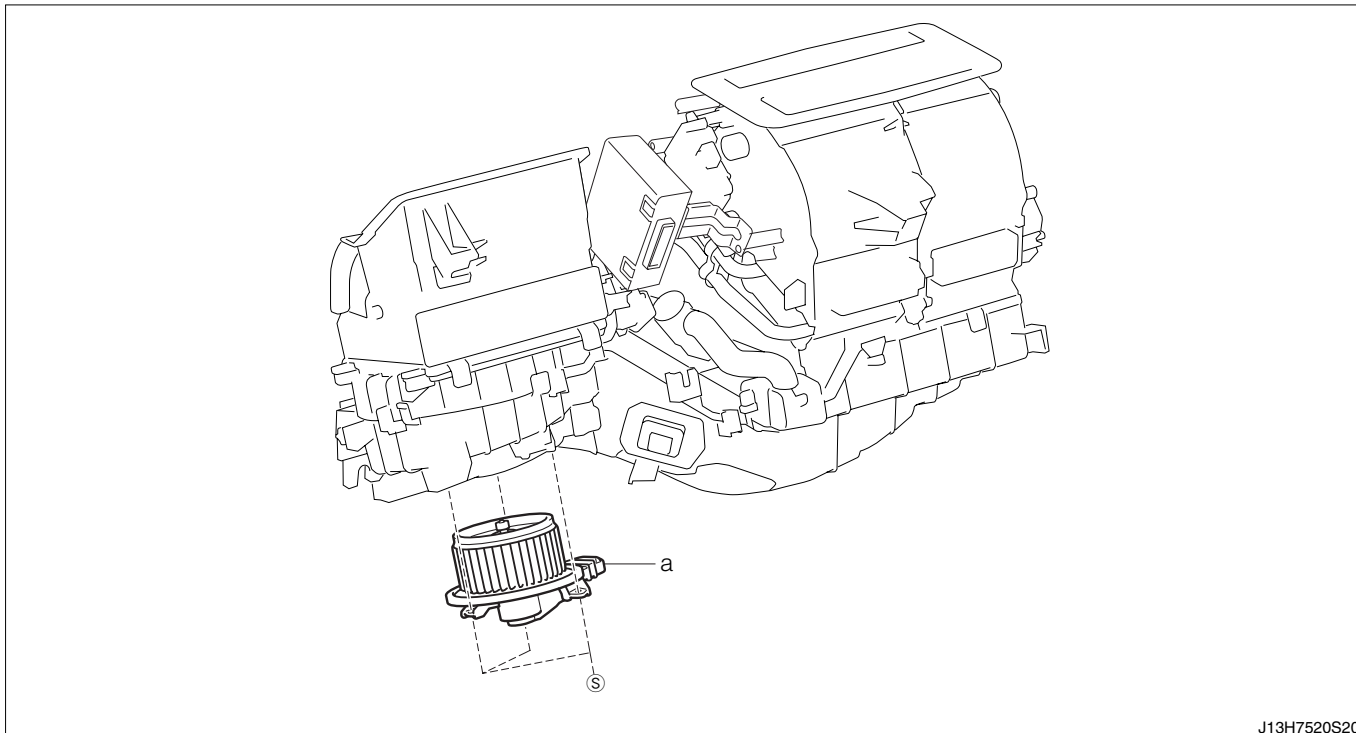
4-1-1 OPERATION BEFORE REMOVAL

1. Set the IG SW to LOCK, disconnect the negative battery terminal.
2. Remove the No.2 instrument panel under cover S/A.

Refer to TERIOS SERVICE MANUAL

4-1-2 REMOVAL AND INSTALLATION PROCEDURES

(1) Components



J13H7520S20

(2) Removal and installation procedures

- 1 a Motor Ay, W/fan

4-1-3 OPERATION AFTER INSTALLATION

1. Install the No.2 instrument panel under cover S/A.

Refer to TERIOS SERVICE MANUAL

2. Connect the negative battery terminal.

5 BLOWER MOTOR CONTROLLER

5-1 REMOVAL AND INSTALLATION

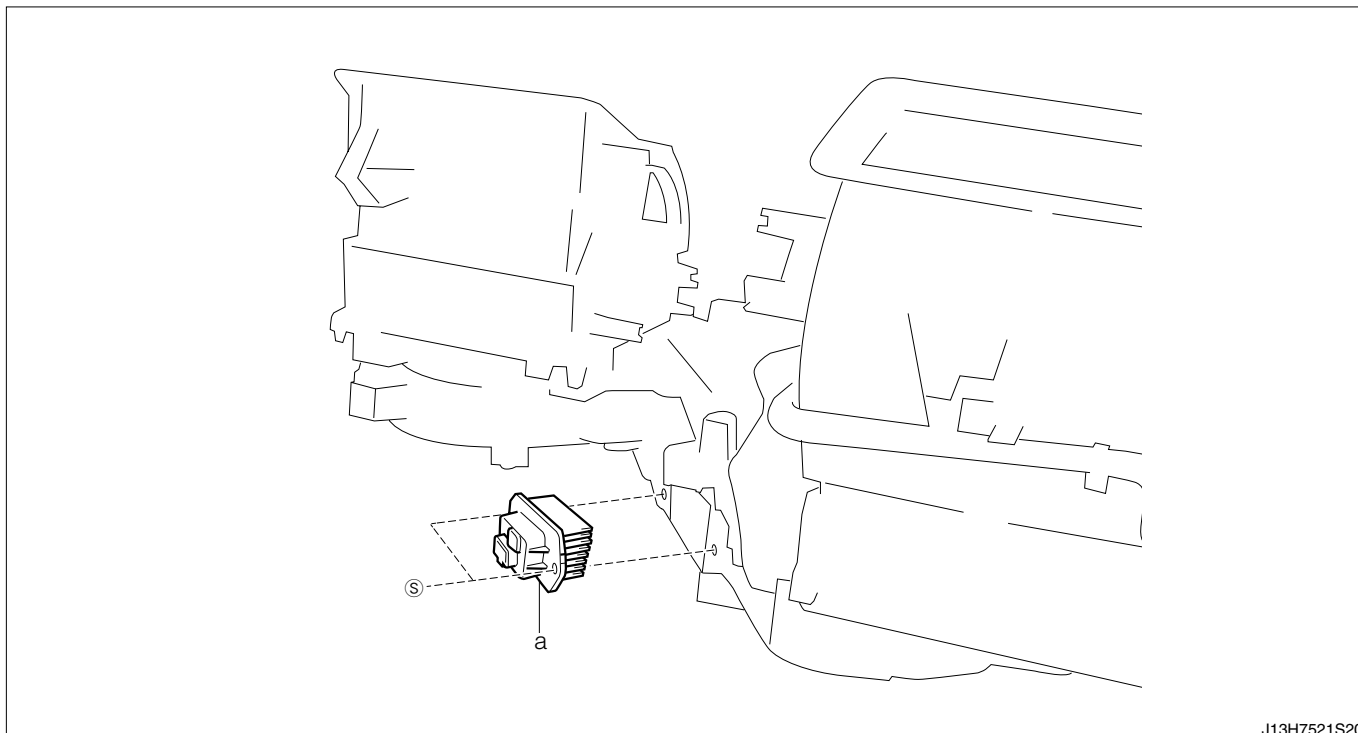
5-1-1 OPERATION BEFORE REMOVAL

1. Set the IG SW to LOCK, disconnect the negative battery terminal.
2. Remove the No.2 instrument panel under cover S/A.

Refer to TERIOS SERVICE MANUAL

5-1-2 REMOVAL AND INSTALLATION PROCEDURES

(1) Components



J13H7521S20

(2) Removal and installation procedures

- 1 a Power transistor Ay, air conditioner

5-1-3 OPERATION AFTER INSTALLATION

1. Install the No.2 instrument panel under cover S/A.

Refer to TERIOS SERVICE MANUAL

2. Connect the negative battery terminal.

6 SERVO MOTOR(FOR MODE)

6-1 REMOVAL AND INSTALLATION

6-1-1 OPERATION BEFORE REMOVAL

1. Set the IG SW to LOCK, disconnect the negative battery terminal.
2. Remove the glove compartment door Ay.

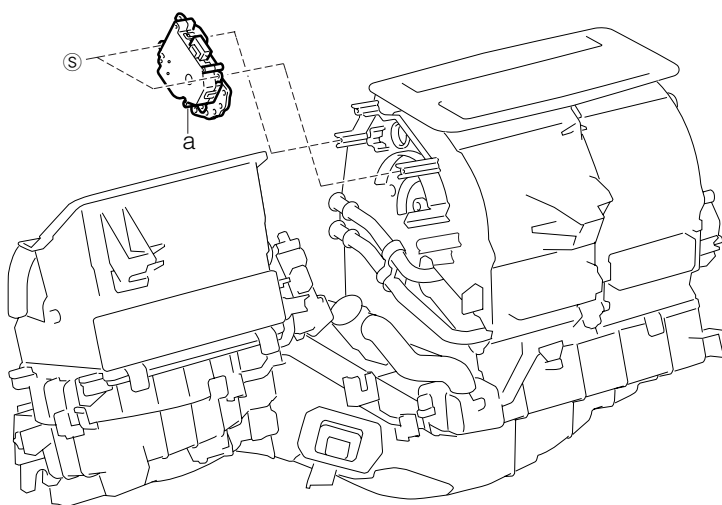
Refer to TERIOS SERVICE MANUAL

3. Remove the amplifier Ay, air conditioner.

Refer to Page K1-14.

6-1-2 REMOVAL AND INSTALLATION PROCEDURES

(1) Components



J13H7522S20

(2) Removal and installation procedures

- 1 a Servo & accessory Ay (for mode)

6-1-3 OPERATION AFTER INSTALLATION

1. Install the amplifier Ay, air conditioner.

Refer to Page K1-14.

2. Attach the glove compartment door Ay.
3. Connect the negative battery terminal.

7 SERVO MOTOR(FOR AIR MIXTURE)

7-1 REMOVAL AND INSTALLATION

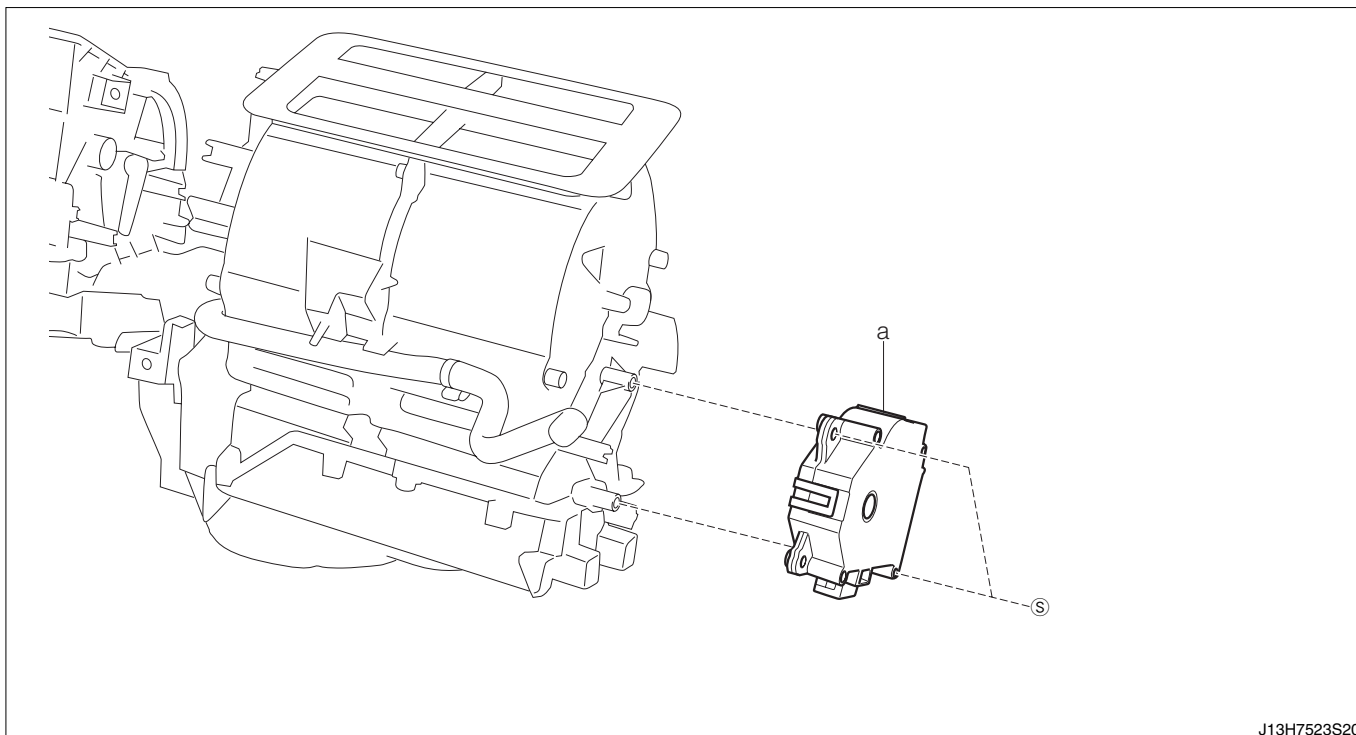
7-1-1 OPERATION BEFORE REMOVAL

1. Set the IG SW to LOCK, disconnect the negative battery terminal.
2. Remove the instrument panel finish lower panel S/A.

Refer to TERIOS SERVICE MANUAL

7-1-2 REMOVAL AND INSTALLATION PROCEDURES

(1) Components



J13H7523S20

(2) Removal and installation procedures

- 1 a Servo & accessory Ay (for air mixture)

7-1-3 OPERATION AFTER INSTALLATION

1. Install the instrument panel finish lower panel S/A.

Refer to TERIOS SERVICE MANUAL

2. Connect the negative battery terminal.

8 SERVO MOTOR(FOR INSIDE/OUTSIDE AIR)

8-1 REMOVAL AND INSTALLATION

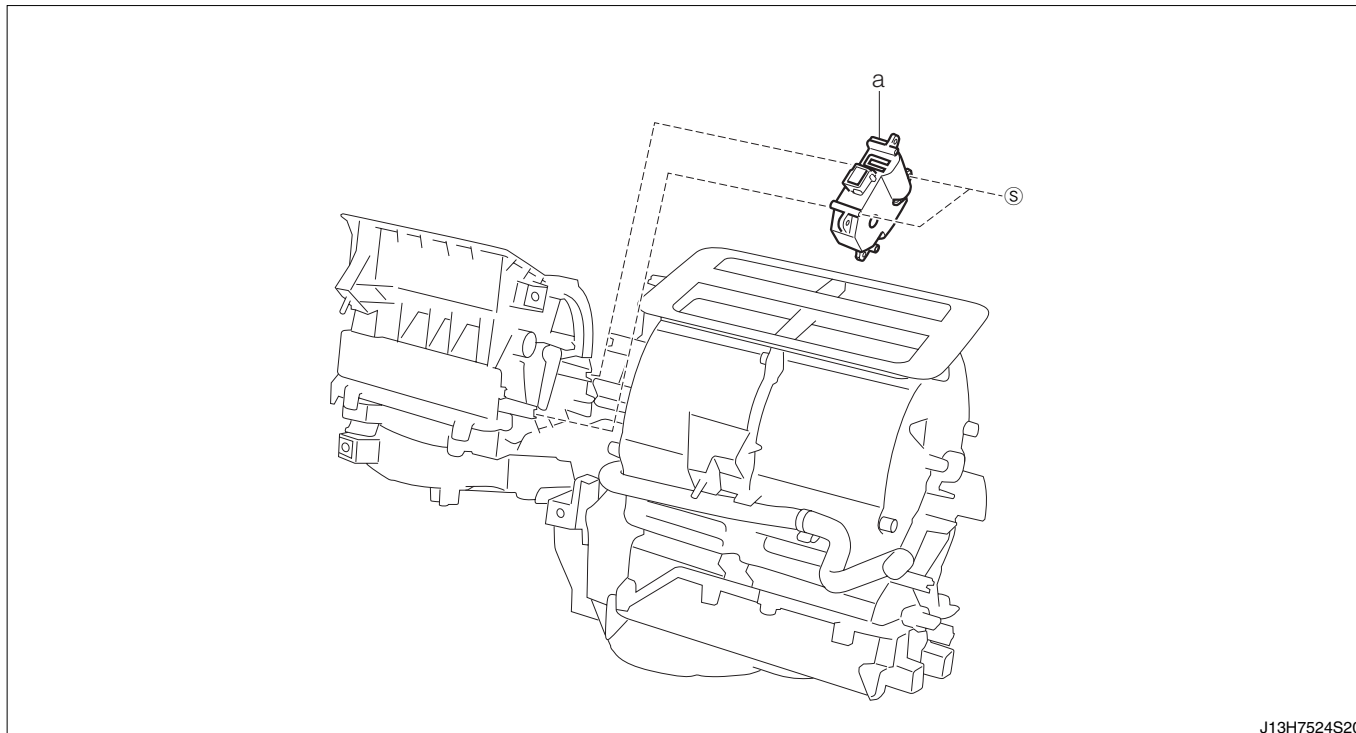
8-1-1 OPERATION BEFORE REMOVAL

1. Set the IG SW to LOCK, disconnect the negative battery terminal.
2. Remove the glove compartment door Ay.

Refer to TERIOS SERVICE MANUAL

8-1-2 REMOVAL AND INSTALLATION PROCEDURES

(1) Components



J13H7524S20

(2) Removal and installation procedures

- 1 a Servo & accessory Ay (for inside/outside air)

8-1-3 OPERATION AFTER INSTALLATION

1. Attach the glove compartment door Ay.

Refer to TERIOS SERVICE MANUAL

2. Connect the negative battery terminal.

9 INSIDE AIR SENSOR

9-1 REMOVAL AND INSTALLATION

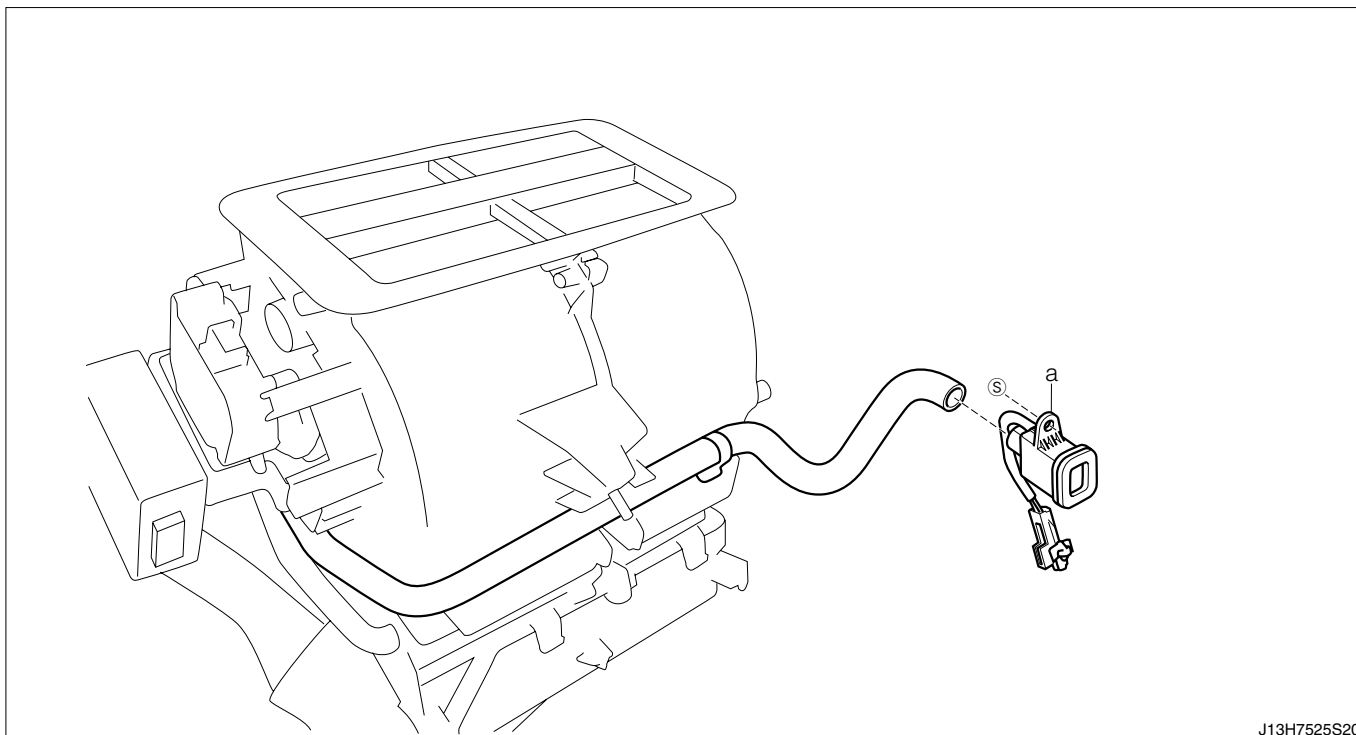
9-1-1 OPERATION BEFORE REMOVAL

1. Set the IG SW to LOCK, disconnect the negative battery terminal.
2. Remove the instrument cluster finish center.

Refer to TERIOS SERVICE MANUAL

9-1-2 REMOVAL AND INSTALLATION PROCEDURES

(1) Components



J13H7525S20

(2) Removal and installation procedures

- ▼ 1 a Thermistor Ay (Inside air sensor)

9-1-3 POINTS OF REMOVAL

1. Remove the screw, using a short screwdriver (KTC SD3—P or equivalent).

9-1-4 OPERATION AFTER INSTALLATION

1. Install the instrument cluster finish center panel S/A.

Refer to TERIOS SERVICE MANUAL

2. Connect the negative battery terminal.

K1-21

10 INSOLATION SENSOR

10-1 REMOVAL AND INSTALLATION

10-1-1 ARTICLES TO BE PREPARED

Oil and lubricants · Adhesives · Other

Protective tape

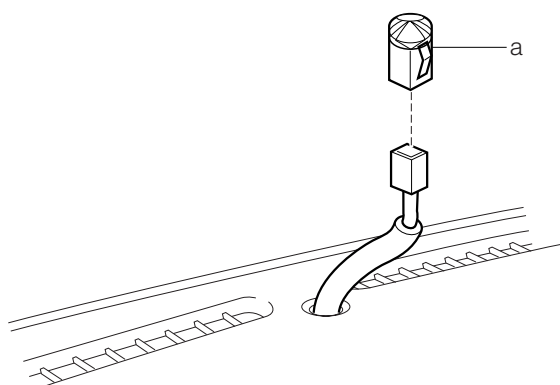
10-1-2 OPERATION BEFORE REMOVAL

1. Set the IG SW to LOCK, disconnect the negative battery terminal.
2. Remove the stereo component tuner Ay.

Refer to TERIOS SERVICE MANUAL

10-1-3 REMOVAL AND INSTALLATION PROCEDURES

(1) Components



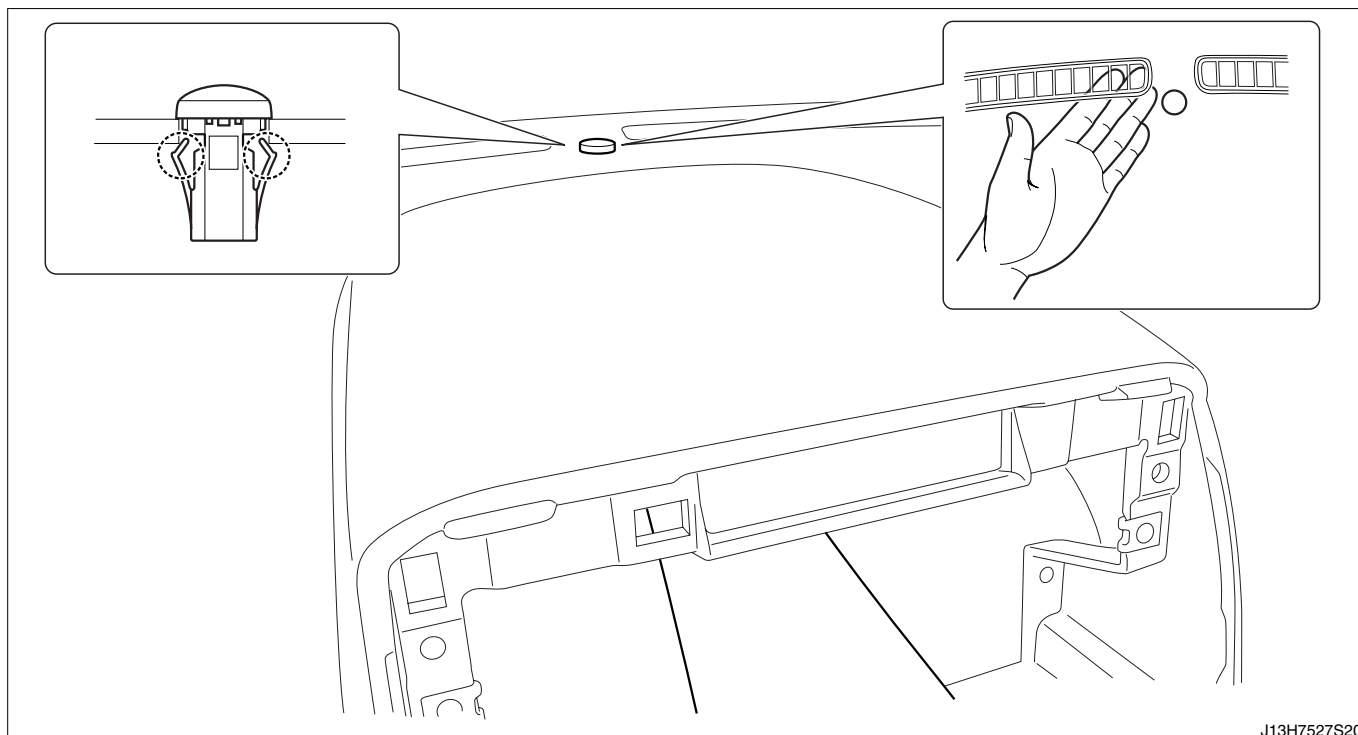
J13H7526S20

(2) Removal and installation procedures

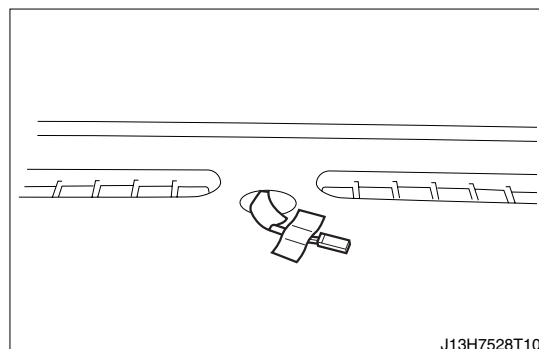
- ▼ 1 a Thermistor, cooler (insolation sensor)

10-1-4 POINTS OF REMOVAL**(1) Thermistor, cooler (Insolation sensor)**

1. Insert your hand into the installation section of the stereo component tuner Ay, as shown in the illustration, and disengage the claw of the insolation sensor. Then remove the thermistor.



2. Hold the sub-harness in place with protective tape, etc. so that it does not fall into the instrument panel.

**10-1-5 OPERATION AFTER INSTALLATION**

1. Install the stereo component tuner Ay.

Refer to TERIOS SERVICE MANUAL

2. Connect the negative battery terminal.

11 AUTO AIR CONDITIONER SYSTEM

11-1 ARTICLES TO BE PREPARED

Instruments

| |
|-------------------------|
| Electrical tester,DS-II |
|-------------------------|

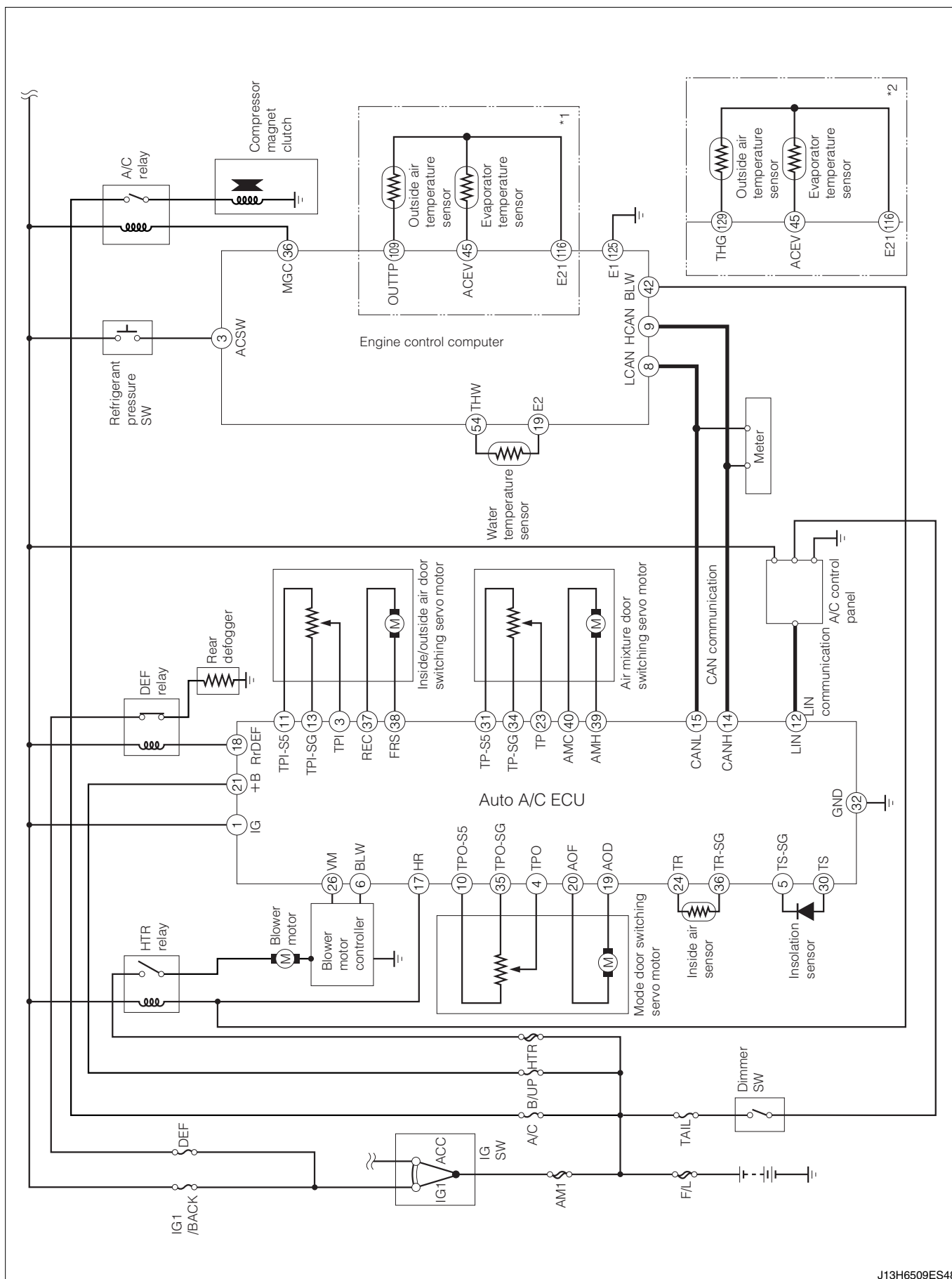
Tools

| |
|----------------|
| Manifold gauge |
|----------------|

Lubricant,adhesive,others

| |
|-----------------------------------|
| Fluorescent or Incandescent light |
|-----------------------------------|

11-2 SYSTEM WIRING DIAGRAM

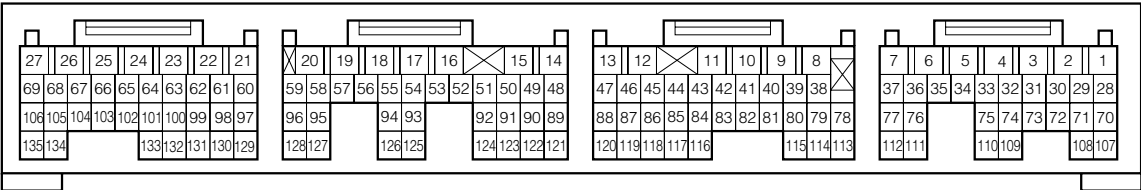


J13H6509ES48

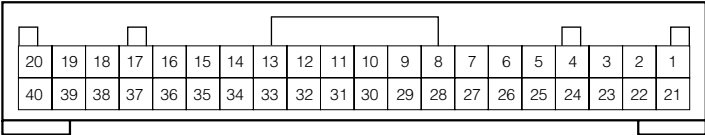
*1: Europe specifications

*2: General specifications, China specifications

11-3 ARRANGEMENT OF ECU TERMINAL



Engine control computer



Auto A/C ECU

J13H6001ES25

Air conditioner amplifier terminal names

| Terminal No. | Terminal code | Terminal name |
|-------------------|---------------|--------------------------------------|
| 3 | ACSW | Refrigerant pressure SW input |
| 8 | LCAN | CAN communication Low |
| 9 | HCAN | CAN communication High |
| 19 | E2 | Earth of water temperature sensor |
| 36 | MGC | Magnet clutch driving output |
| 42 | BLW | Heater blower operation input |
| 45 | ACEV | Evaporator temperature sensor input |
| 54 | THW | Water temperature sensor input |
| 109 ^{*1} | OUTTP | Outside air temperature sensor input |
| 116 | E21 | Earth of sensor |
| 125 | E1 | Earth of calculation system |
| 129 ^{*2} | THG | Outside air temperature sensor input |

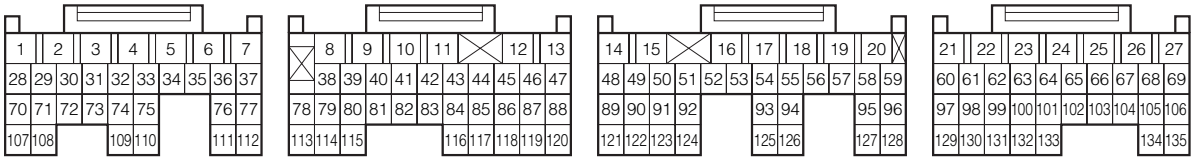
*1: Europe specifications

*2: General specifications, China specifications

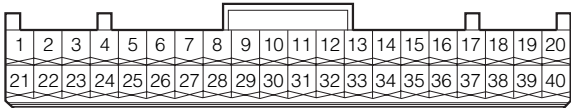
Auto A/C ECU terminal names

| Terminal No. | Terminal code | Terminal name | Terminal No. | Terminal code | Terminal name |
|--------------|---------------|---|--------------|---------------|--|
| 1 | IG | IG power supply | 21 | +B | Battery power supply |
| 2 | — | — | 22 | — | — |
| 3 | TPI | Inside/outside air servo potentiometer input | 23 | TP | Air mixture servo potentiometer input |
| 4 | TPO | Mode servo potentiometer input | 24 | TR | Inside air sensor input |
| 5 | TS-SG | Insolation sensor input | 25 | — | — |
| 6 | BLW | Blower motor controller driving output | 26 | VM | Blower motor controller voltage output |
| 7 | — | — | 27 | — | — |
| 8 | — | — | 28 | — | — |
| 9 | — | — | 29 | — | — |
| 10 | TPO-S5 | Mode servo potentiometer power supply | 30 | TS | Insolation sensor power supply |
| 11 | TPI-S5 | Inside/outside air servo potentiometer power supply | 31 | TP-S5 | Air mixture servo potentiometer power supply |
| 12 | LIN | Air conditioner control panel input/output | 32 | GND | Earth |
| 13 | TPI-SG | Earth of inside/outside air switching servo potentiometer | 33 | — | — |
| 14 | CANH | CAN communication High | 34 | TP-SG | Earth of air mixture servo potentiometer |
| 15 | CANL | CAN communication Low | 35 | TPO-SG | Earth of mode servo potentiometer |
| 16 | — | — | 36 | TR-SG | Earth of inside air sensor |
| 17 | HR | Heater blower operation input | 37 | REC | Inside air mode driving output |
| 18 | RrDEF | Rear window defogger input | 38 | FRS | Outside air mode driving output |
| 19 | AOD | Mode DEF side output | 39 | AMH | Air mixture HOT side output |
| 20 | AOF | Mode FACE side output | 40 | AMC | Air mixture COOL side output |

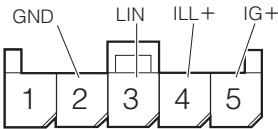
11-4 ARRANGEMENT OF VEHICLE HARNESS SIDE CONNECTOR TERMINALS



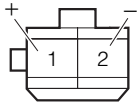
Engine control computer



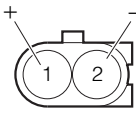
Auto A/C ECU



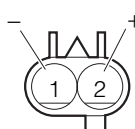
A/C control panel



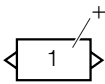
Inside air sensor



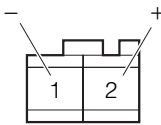
Outside air temperature sensor



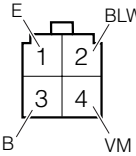
Refrigerant pressure SW



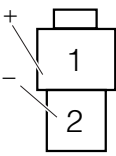
Compressor magnet clutch



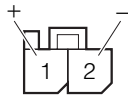
Blower motor



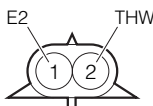
Blower motor controller



Evaporator temperature sensor



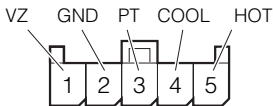
Insolation sensor



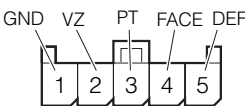
Water temperature sensor



Inside/outside air door switching servo motor

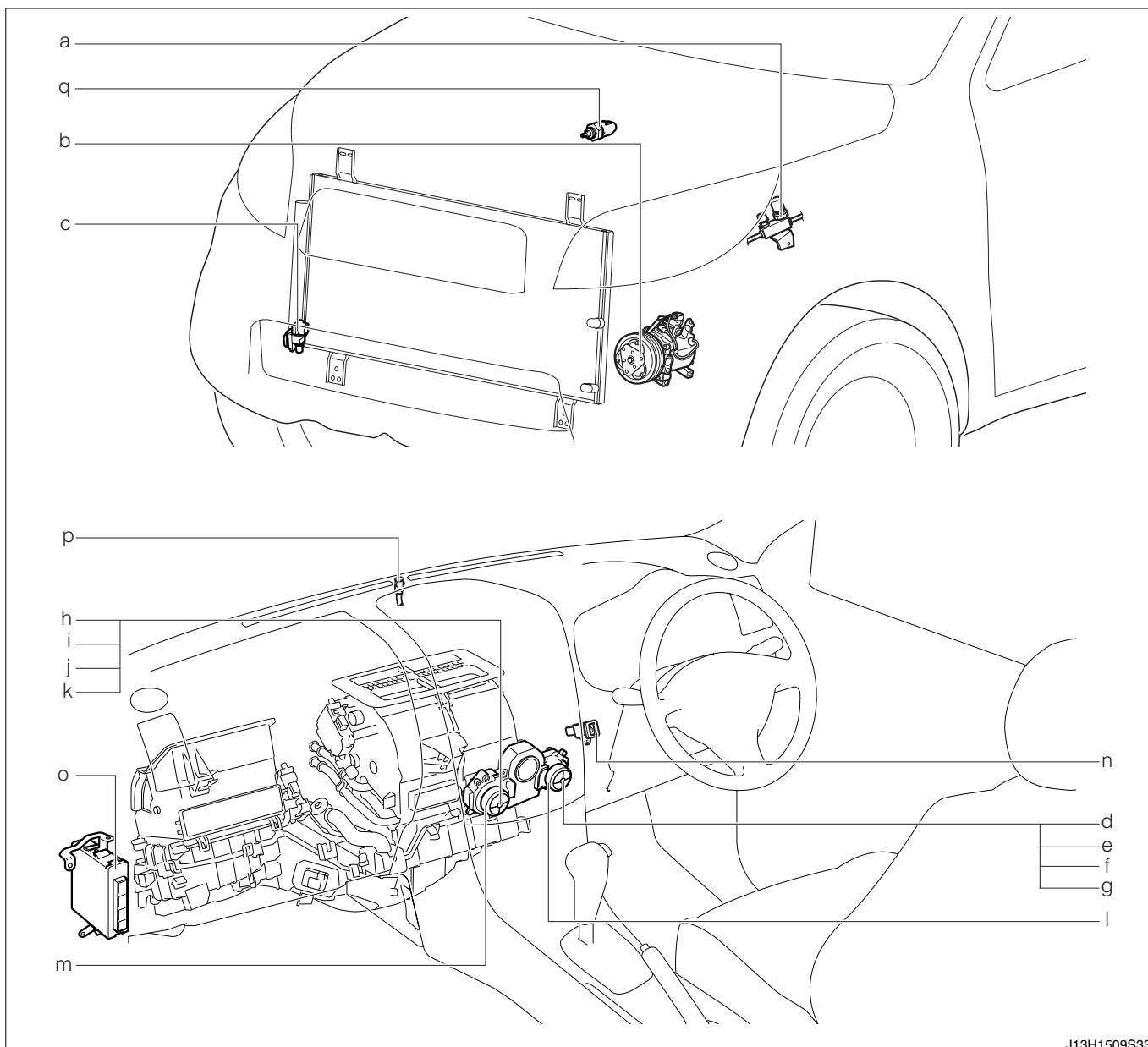


Air mixture door switching servo motor



Mode door switching servo motor

11-5 LOCATION OF COMPONENTS

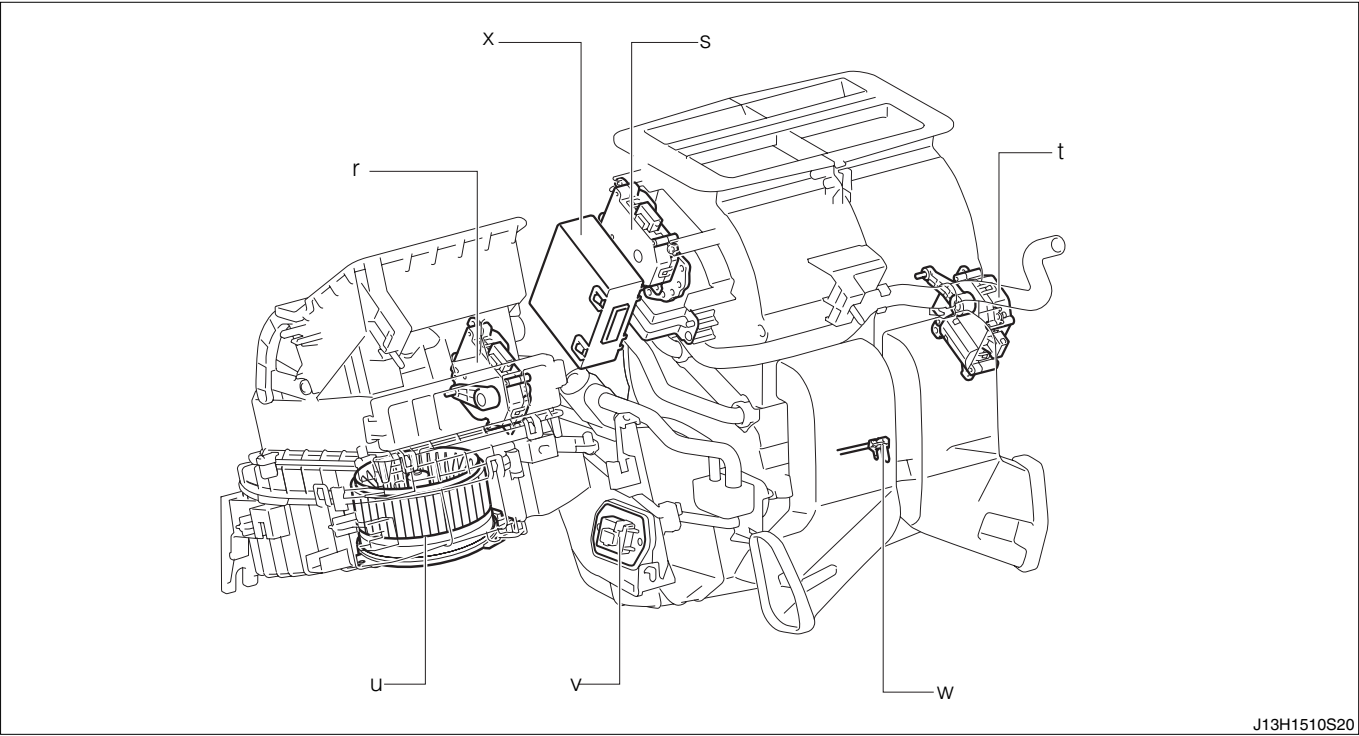


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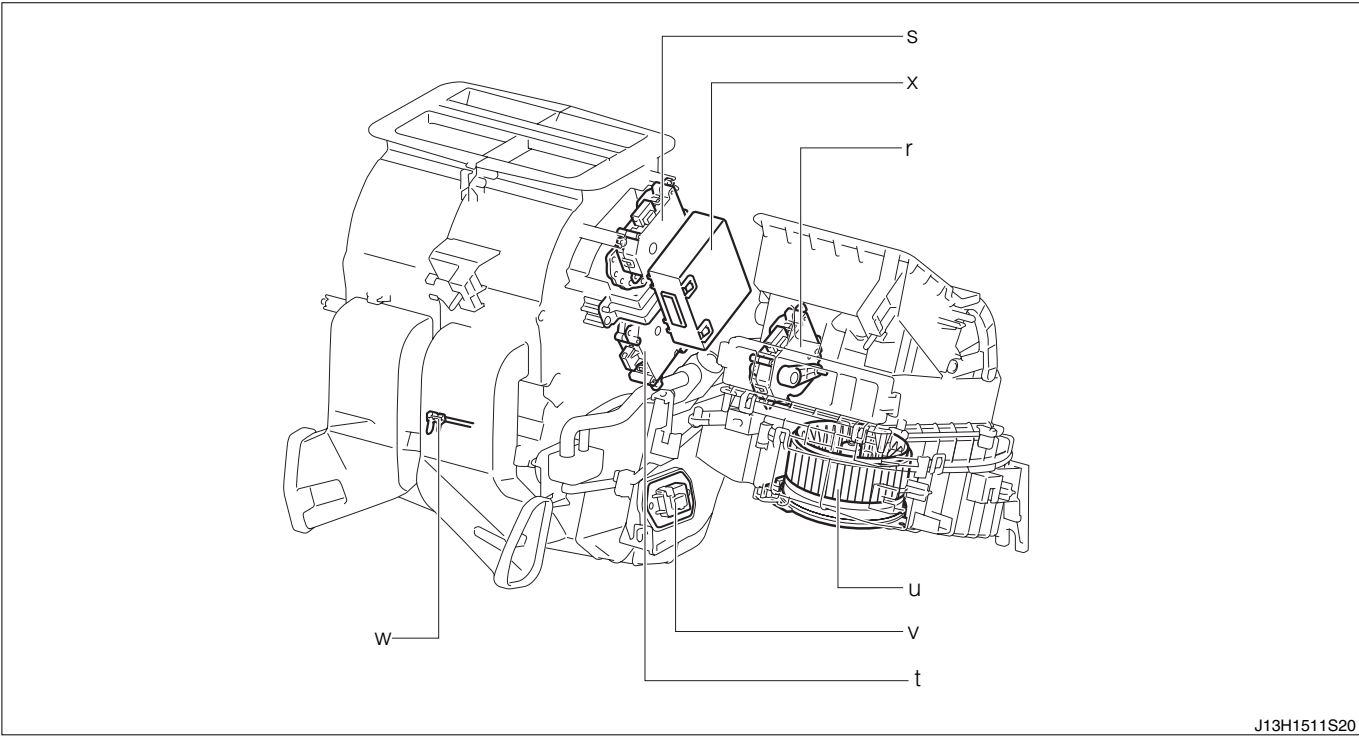
The illustration shows a typical example.

| Code | Parts name |
|------|---|
| a | Refrigerant pressure switch |
| b | Compressor magnet clutch |
| c | Outside air temperature sensor |
| d | AUTO switch (Air conditioner control panel) |
| e | OFF switch (Air conditioner control panel) |
| f | Inside air select switch (Air conditioner control panel) |
| g | Outside air select switch (Air conditioner control panel) |
| h | Front defroster switch (Air conditioner control panel) |
| i | Air outlet port select switch (Air conditioner control panel) |
| j | Rear window defogger switch (Air conditioner control panel) |
| k | A/C switch (Air conditioner control panel) |
| l | Temperature setting dial |
| m | Blower select dial |
| n | Inside air sensor |
| o | Engine control computer (EFI ECU) |
| p | Insolation sensor |
| q | Water temperature sensor |

RHD vehicles



LHD vehicles



| Code | Parts name |
|------|---|
| r | Inside/outside air door switching servo motor |
| s | Mode door switching servo motor |
| t | Air mixture door switching servo motor |
| u | Blower motor |
| v | Blower motor controller |
| w | Evaporator temperature sensor |
| x | Air conditioner amplifier (Auto A/C ECU) |

11-6 HOW TO PROCEED WITH TROUBLE SHOOTING

This system equips a diagnosis function to diagnose problem areas, and to provide important clues when performing troubleshooting.

▷1. Bringing malfunctioning vehicle to workshop

▼ Go to ▷2.

▷2. Diagnosis through interview

1. Thoroughly obtain information from the customer concerning the conditions, environment and phenomenon in which the malfunction took place.

▼ Go to ▷3.

▷3. Operation confirmation of CAN communication system

1. Confirm that the CAN communication system is operating normally.

Refer to Page L2-1.

▼ If it is OK, go to ▷4.

▼ If it is NG, repair the CAN communication system.

▷4. Confirmation and recording of diagnosis codes

Refer to Page K1-34.

▼ Go to ▷5.

▷5. BASIC CHECK

Refer to Page K1-36.

▼ Go to ▷6.

▷6. Reconfirmation of diagnosis codes

Refer to Page K1-34.

▼ When a normal code is outputted, go to ▷7.

▼ If an abnormality code is outputted, go to ▷8.

▷7. Troubleshooting according to diagnosis codes

1. Perform troubleshooting for the outputted diagnostic codes.

Refer to Page K1-37.

▼ After the repair has been completed, go to ▷9.

▷8. Troubleshooting according to malfunction phenomenon

1. Troubleshoot problems according to malfunction phenomenon.

Refer to Page K1-48.

▼ After the repair is completed, go to ▷9.

▷9. Confirmation test

1. Confirm that the problems claimed by the customer have been restored completely and the vehicle has been recovered to the normal condition.
 - ▼ If it is OK, finish the operation.
 - ▼ If it is NG, return to ▷4 and perform the check again.

11-7 INQUIRY

11-7-1 DESCRIPTION

1. In your attempt to remove the causes of a malfunction from the vehicle, you will not be able to remove the causes unless you actually confirm the malfunctioning phenomenon. No matter how long you continue operations, the vehicle may not resume the normal state unless you confirm the malfunctioning phenomenon. The inquiry with the customer is a vital information collecting activity to be conducted to the confirmation of malfunctioning phenomenon.
2. Since the information obtained through the diagnostic inquiries is referred to during the troubleshooting, it is imperative to ask a specific inquiry to the customer, while placing the inquiry items related to the malfunction on the center, instead of simply asking general questions.

11-7-2 INQUIRY SHEET FOR HEATER AND AIR CONDITIONER SYSTEM

| | | | |
|------------|--|---------------|-------------------------------|
| Checked by | | Date of check | Month Day (a day of the week) |
|------------|--|---------------|-------------------------------|

Customer information

| | | | | |
|------------------|---------|-----------------------------------|---|---------------------------------|
| Name of customer | | Gender of customer (Male, female) | Age [approx.] | Occupation [] |
| | Mr./Ms. | Area where vehicle is mainly used | Urban, suburb, seashore, mountain, others | Parking place Outdoor or indoor |

Details of vehicle

| | | | | | |
|---|-------------------------------|----------------------------------|---|-------------------|-----------------------------|
| Date when vehicle was brought to workshop | Month Day (a day of the week) | Date when malfunction took place | Month Day (a day of the week) | History of repair | No or Yes [How many times?] |
| Frame No. | | Date of registration | Year Month Day | Vehicle type | |
| Engine type | | Transmission | 5M/T, 3A/T, 4A/T, CVT, Electronically-controlled 4A/T | Driving | 2WD or 4WD |
| Running distance | km | Equipment | Tire [], Wheel [Steel or Aluminum] | | |

Weather

| |
|---|
| <input type="checkbox"/> Fine <input type="checkbox"/> Cloudy <input type="checkbox"/> Rainy <input type="checkbox"/> Snow, Other |
| Temperature approx. °C |

Frequency of malfunction

| |
|---|
| <input type="checkbox"/> Always <input type="checkbox"/> Under certain condition () <input type="checkbox"/> Sometimes |
|---|

Phenomena

| |
|---|
| <input type="checkbox"/> Cannot turn the A/C switch on or off. |
| <input type="checkbox"/> Cannot turn the heater and air conditioner system off. |
| <input type="checkbox"/> The indicator check starts. |
| <input type="checkbox"/> Cannot switch to the AUTO mode. |
| <input type="checkbox"/> The illumination of each SW on the control panel does not come on. |
| <input type="checkbox"/> The compressor turns off. |
| <input type="checkbox"/> The setting temperature is not displayed or changed. |
| <input type="checkbox"/> The sensor check starts. |
| <input type="checkbox"/> Cannot turn the defroster on or off. |
| <input type="checkbox"/> The mode alters between inside air and outside air continuously. |
| <input type="checkbox"/> Cannot switch the mode between inside air and outside air. |
| <input type="checkbox"/> The temperature at air outlet ports does not change. |
| <input type="checkbox"/> The directions of the air outlet ports do not change. |
| <input type="checkbox"/> The blower motor does not operate/switch. |
| <input type="checkbox"/> Cannot turn the magnet clutch on or off. |
| <input type="checkbox"/> Poor cooling performance |
| <input type="checkbox"/> Others |

K1-33

Confirmation of customizing function setting

| |
|--|
| <input type="checkbox"/> Controlling a setting temperature 2 °C lower than a temperature displayed. |
| <input type="checkbox"/> Controlling a setting temperature 2 °C higher than a temperature displayed. |
| <input type="checkbox"/> Cancelling R/F auto mode changing. |
| <input type="checkbox"/> Others |

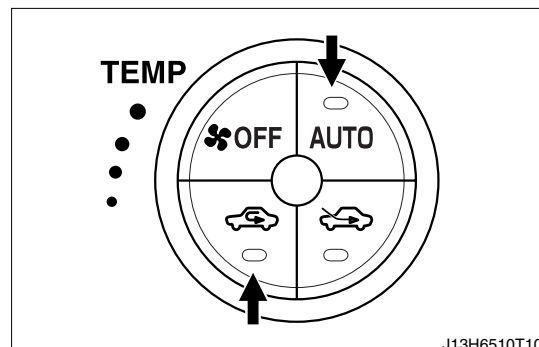
| | | |
|-------------------------|-------------------|--|
| Indication of diagnosis | During inspection | <input type="checkbox"/> Normal <input type="checkbox"/> Abnormality code [] |
| | 2nd time | <input type="checkbox"/> Normal <input type="checkbox"/> Abnormality code [] |
| | times | <input type="checkbox"/> Normal <input type="checkbox"/> Abnormality code [] |

11-8 CONFIRMATION, RECORD AND ERASURE OF DIAGNOSIS CODE

11-8-1 CHECKING METHOD OF DIAGNOSIS

(1) Check by panel diagnosis (Indicator check)

1. Set the IG SW to OFF.
2. Set the IG SW to ON while pressing both the AUTO switch and the REC switch on the control panel simultaneously.

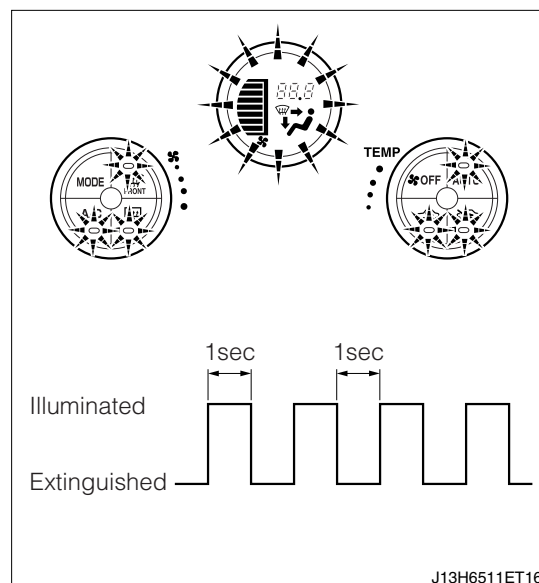


3. Confirm that all indicators and the settings displaying area repeat come on and go off for four times with the interval of one second.

NOTE

- After completing the indicator check, the sensor check starts automatically.

4. To finish the panel diagnosis, press the OFF switch of the control panel.



(2) Check by panel diagnosis (Sensor check)

1. Perform the indicator check.

NOTE

- After completing the indicator check, the sensor check starts automatically.

2. Confirm that the result of the sensor check is displayed on the setting temperature displaying area.

| | |
|-----------------|-----------------|
| Check result | Code indication |
| Current problem | Flashing |

NOTE

- The illustration shows when the code "11" is indicated.
- If there are two or more abnormality codes, the smaller code number comes first.

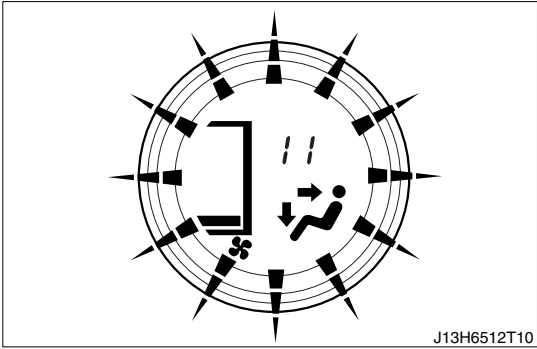
3. If there are two or more abnormality codes and they are difficult to read, press the MODE switch and select the fixed display mode (step operation) to read the codes.

NOTE

- Each time the MODE switch is operated, the item being indicated will be magnified.

4. If the sensor check code is output, read the codes from the diagnosis code list.

5. To finish the panel diagnosis, press the OFF switch at the control panel.



11-8-2 CANCELING METHOD OF DIAGNOSIS

1. When the problem has been restored, the diagnosis codes are erased automatically.

11-8-3 CONTENTS OF DIAGNOSIS

Contents of diagnosis

| Code No. | Warning indication (Provided: ○, Not-provided:×) | Record of codes (Provided: ○, Not-provided:×) | Contents of diagnosis |
|----------|---|--|---|
| LCD | | | |
| 00 | × | × | Normal |
| 11 | × | × | Inside air sensor system abnormality |
| 21 | × | × | Insolation sensor system abnormality * |
| 41 | × | × | System abnormality in air mixture door switching servo motor |
| 42 | × | × | System abnormality in inside/outside air door switching servo motor |
| 43 | × | × | System abnormality in mode door switching servo motor |
| 99 | × | × | CAN communication system abnormality |

*: As the diagnosis is performed at a dark place, an abnormality of the insolation sensor system may be detected. Be sure to perform the diagnosis at a bright place.

11-9 BASIC CHECK

11-9-1 BATTERY VOLTAGE CHECK

Refer to TERIOS SERVICE MANUAL

11-9-2 CHECK OF POWER SUPPLY AND EARTH CIRCUIT FOR AUTOMATIC AIR CONDITIONER ECU

1. Check the voltage between each terminal of the power supply and the body earth.

SPECIFIED VALUE: 10 – 14V

2. Check the conduction between each terminal of the power supply and the body earth.

SPECIFIED VALUE: Conduction

11-9-3 CHECK OF POWER SUPPLY AND EARTH CIRCUIT FOR ENGINE CONTROL COMPUTER

Refer to Page B8-25.

11-9-4 CHECK OF POWER SUPPLY AND EARTH CIRCUIT FOR AIR CONDITIONER CONTROL PANEL

1. Check the voltage between each terminal of the power supply and the body earth.

SPECIFIED VALUE: 10 – 14V

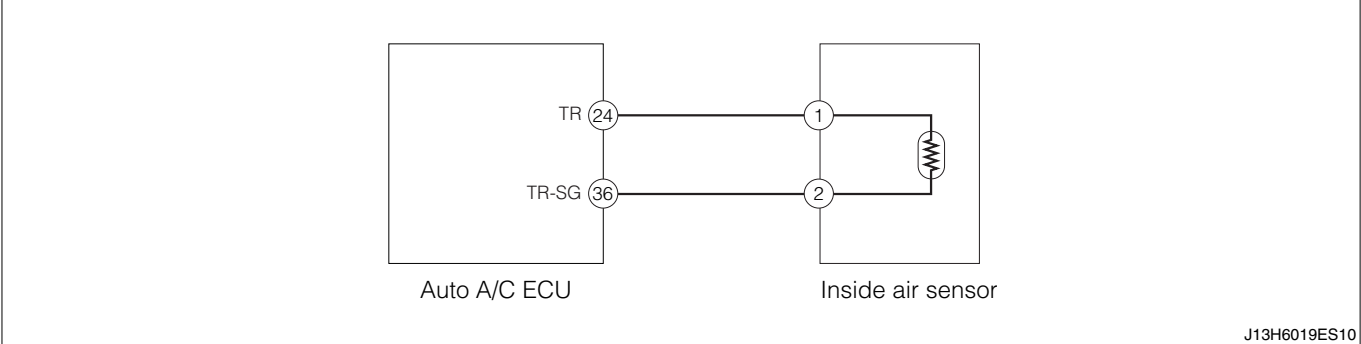
2. Check the conduction between each terminal of the power supply and the body earth.

SPECIFIED VALUE: Conduction

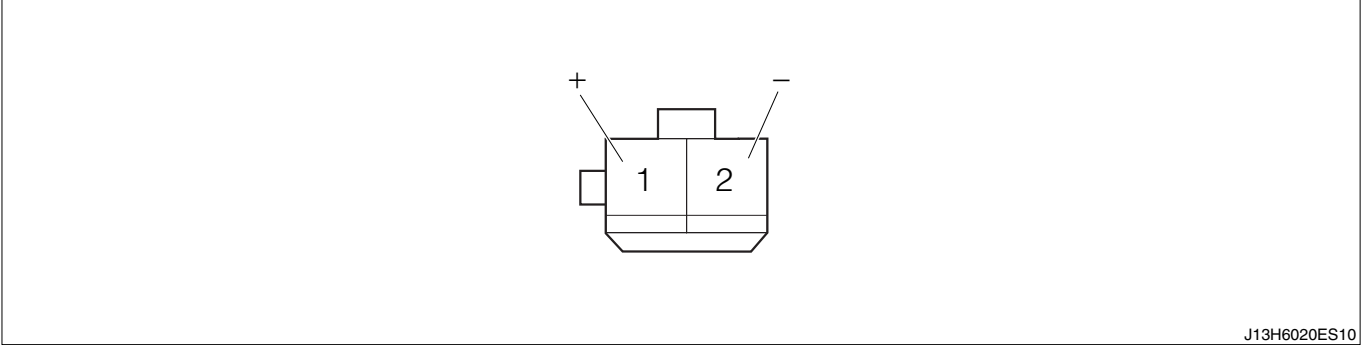
11-10 TROUBLE SHOOTING ACCORDING TO DIAGNOSIS CODE

11-10-1 NO.11 (INSIDE AIR SENSOR SYSTEM ABNORMALITY)

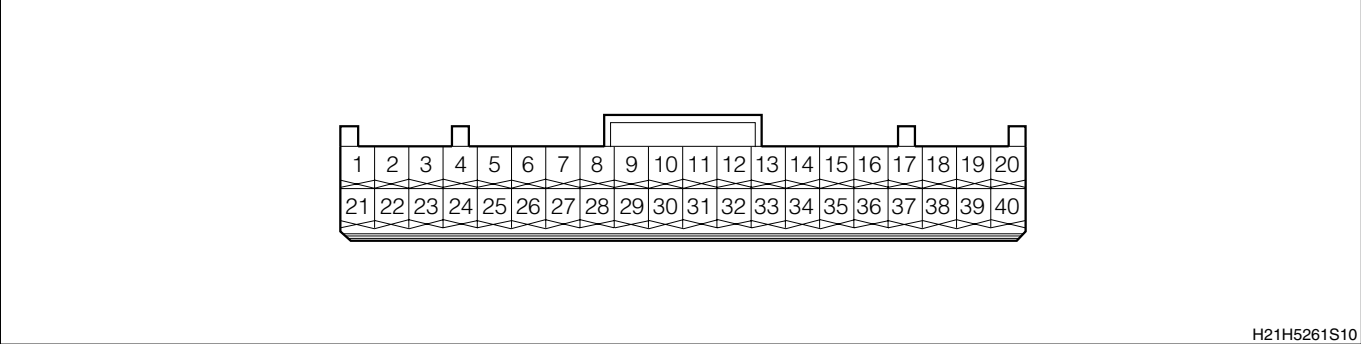
(1) System circuit diagram



Inside air sensor connected vehicle harness side connector



Auto A/C ECU connected vehicle harness side connector



(2) Checking points

1. Ensure that the auto A/C ECU is normal.
2. Ensure that the inside air sensor is normal.
3. Ensure that the wire harness between the inside air sensor and the auto A/C ECU is normal.

(3) Checking procedure**▷1. Unit check of inside air sensor**

1. Perform the unit check of the inside air sensor.

Refer to Page K1-81.

▼ If it is OK, go to ▷2.

▼ If it is NG, replace the inside air sensor.

Refer to Page K1-20.

▷2. Wire harness check

1. Check the conduction and GND short for the following wire harnesses.

- (1) Between inside air sensor connected vehicle harness side connector 1 (+) and auto A/C ECU-connected vehicle harness side connector 24 (TR)
- (2) Between inside air sensor connected vehicle harness side connector 2 (−) and auto A/C ECU-connected vehicle harness side connector 36 (TR-SG)

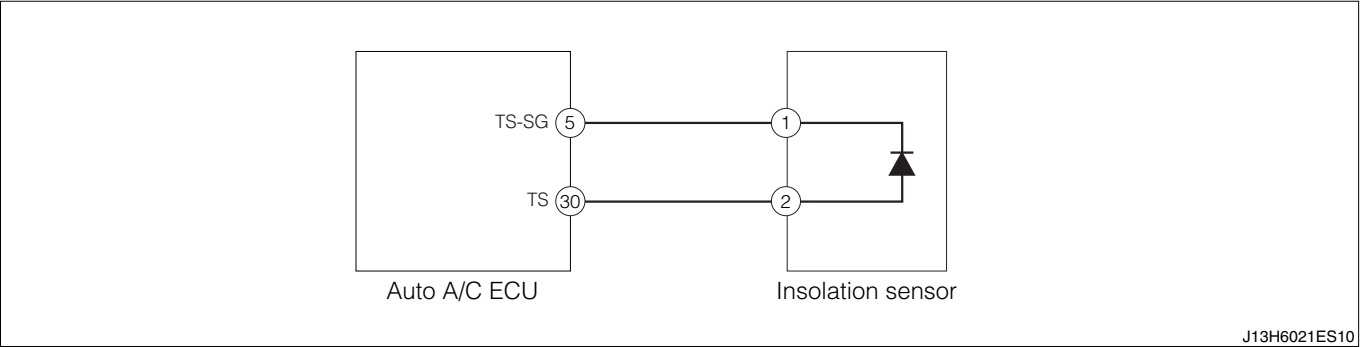
SPECIFIED VALUE: There is conduction between each terminal, and there is no GND short.

▼ If it is OK, check the auto A/C ECU and replace it if necessary.

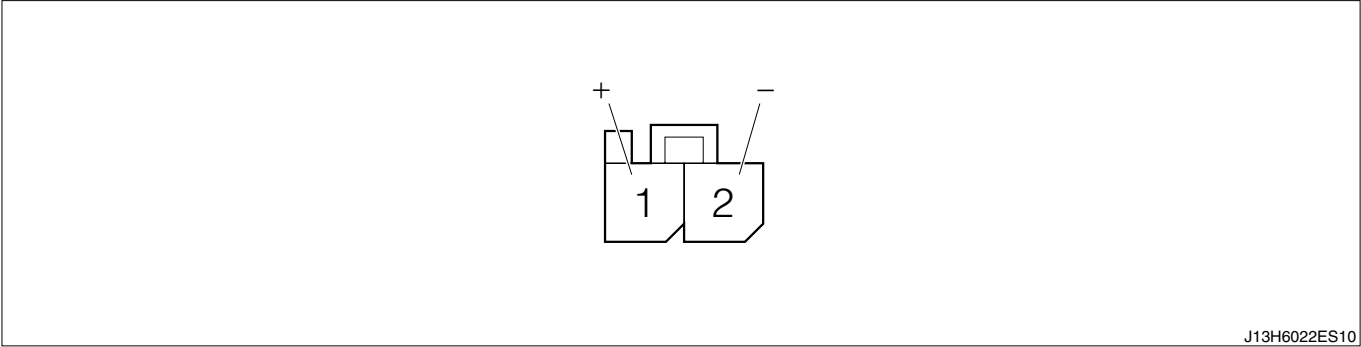
▼ If it is NG, repair or replace the wire harnesses or connectors.

11-10-2 NO.21 (INSOLATION SENSOR SYSTEM ABNORMALITY)

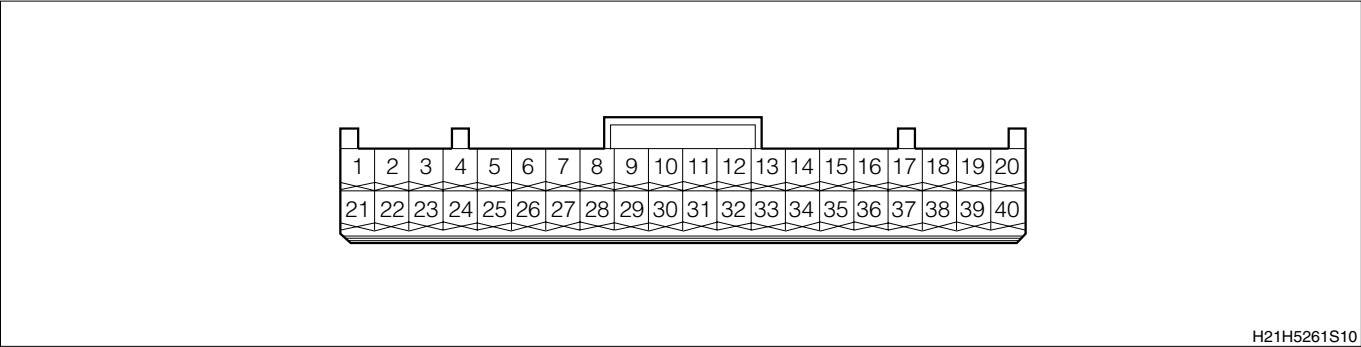
(1) System circuit diagram



Insolation sensor connected vehicle harness side connector



Auto A/C ECU connected vehicle harness side connector



(2) Checking points

- 1. Ensure that auto A/C ECU is normal.
- 2. Ensure that insolation sensor is normal.
- 3. Ensure that the wire harness between the insolation sensor and the auto A/C ECU is normal.

(3) Checking procedure**▷1. Unit check of insolation sensor**

1. Perform the unit check of the insolation sensor.

Refer to Page K1-81.

▼ If it is OK, go to ▷2.

▼ If it is NG, replace the insolation sensor.

Refer to Page K1-21.

▷2. Wire harness check

1. Check the conduction and GND short for the following wire harnesses.

- (1) Between insolation sensor connected vehicle harness side connector 1 (+) and auto A/C ECU connected vehicle harness side connector 5 (TS-SG)
- (2) Between insolation sensor connected vehicle harness side connector 2 (−) and auto A/C ECU connected vehicle harness side connector 30 (TS)

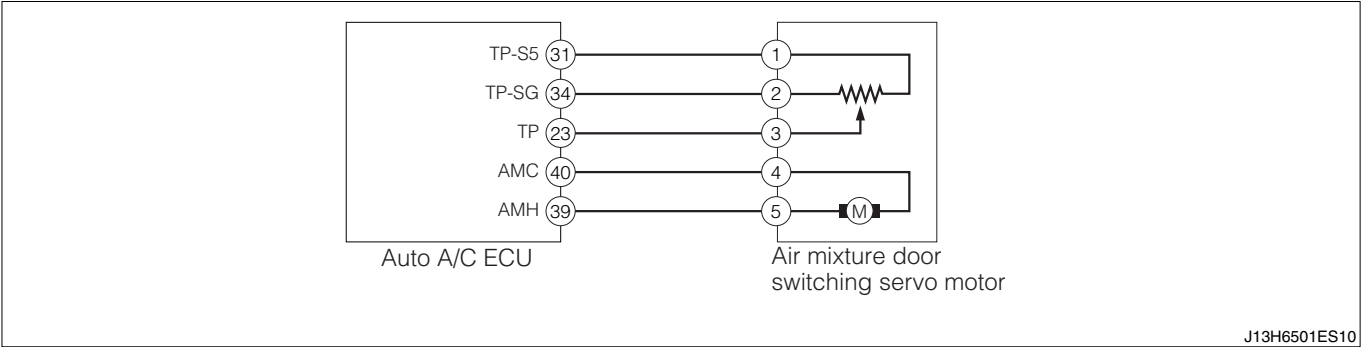
SPECIFIED VALUE: There is conduction between each terminal, and there is no GND short.

▼ If it is OK, check the auto A/C ECU and replace it if necessary.

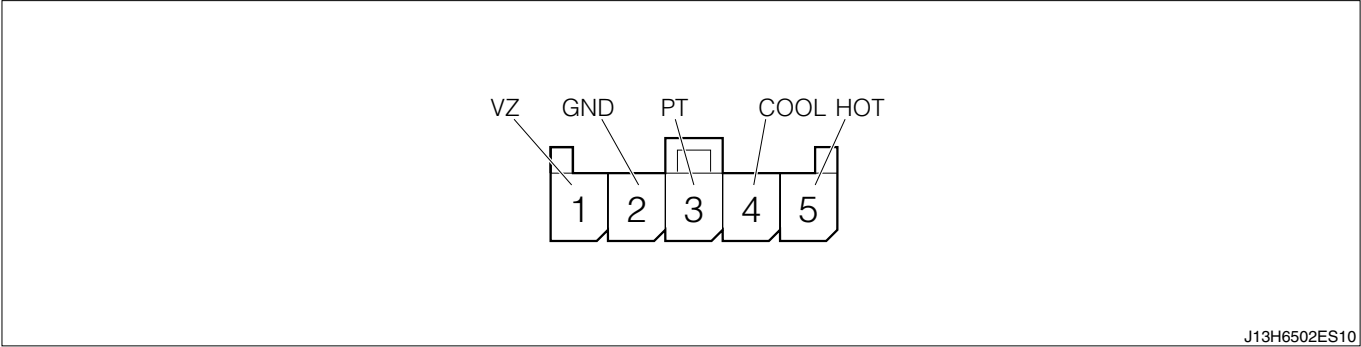
▼ If it is NG, repair or replace the wire harnesses or connectors.

11-10-3 NO.41 (SYSTEM ABNORMALITY IN AIR MIXTURE DOOR SWITCHING SERVO MOTOR)

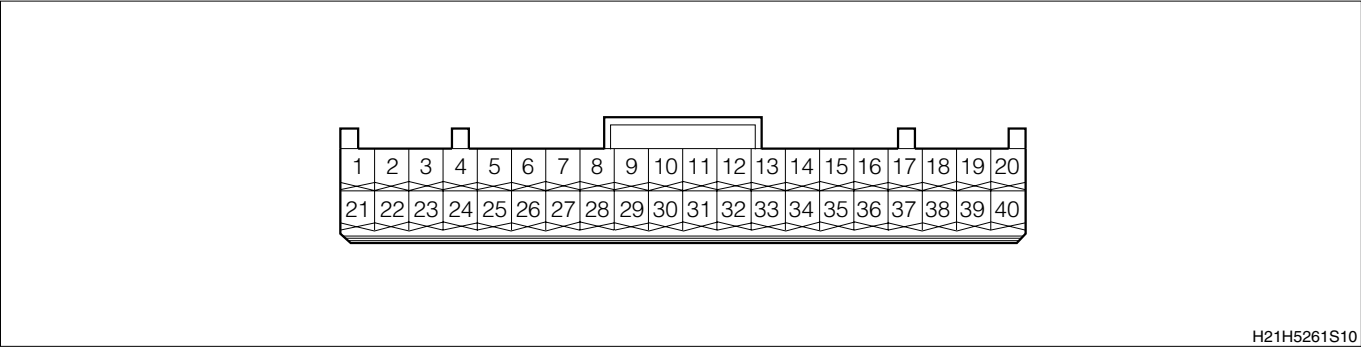
(1) System circuit diagram



Air mixture door switching servo motor connected vehicle harness side connector



Auto A/C ECUconnected vehicle harness side connector



(2) Checking points

- 1. Ensure that auto A/C ECU is normal.
- 2. Ensure that air mixture door switching servo motor is normal.
- 3. Ensure that the wire harness between the air mixture door switching servo motor and the auto A/C ECU is normal.

(3) Checking procedure**▷1. Unit check of air mixture door switching servo motor**

1. Perform the unit check of the air mixture door switching servo motor.

Refer to Page K1-80.

▼ If it is OK, go to ▷2.

▼ If it is NG, replace the air mixture door switching servo motor.

Refer to Page K1-18.

▷2. Wire harness check

1. Check the conduction and GND short for the following wire harnesses.

- (1) Between motor connected vehicle harness side connector 1 (VZ) and auto A/C ECU connected vehicle harness side connector 31 (TP-S5)
- (2) Between motor connected vehicle harness side connector 3 (PT) and auto A/C ECU connected vehicle harness side connector 23 (TP)
- (3) Between motor connected vehicle harness side connector 2 (GND) and auto A/C ECU connected vehicle harness side connector 34 (TP-SG)
- (4) Between motor connected vehicle harness side connector 4 (COOL) and auto A/C ECU connected vehicle harness side connector 40 (AMC)
- (5) Between motor connected vehicle harness side connector 5 (HOT) and auto A/C ECU connected vehicle harness side connector 39 (AMH)

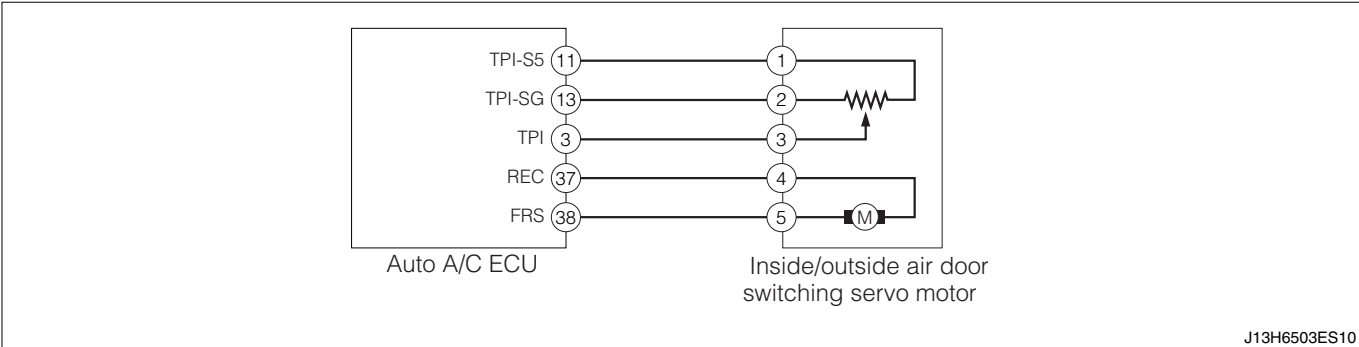
SPECIFIED VALUE: There is conduction between each terminal, and there is no GND short.

▼ If it is OK, check the auto A/C ECU and replace it if necessary.

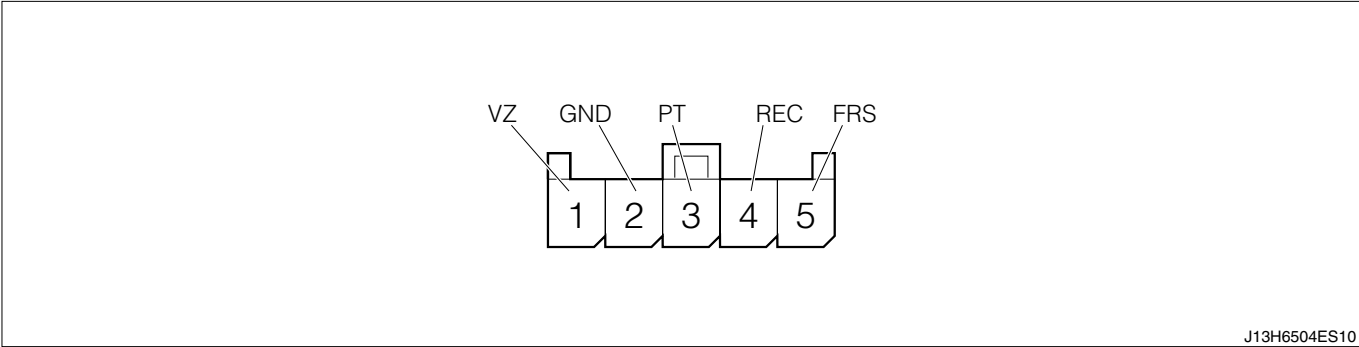
▼ If it is NG, repair or replace the wire harnesses or connectors.

11-10-4 NO.42 (SYSTEM ABNORMALITY IN INSIDE/OUTSIDE AIR DOOR SWITCHING SERVO MOTOR)

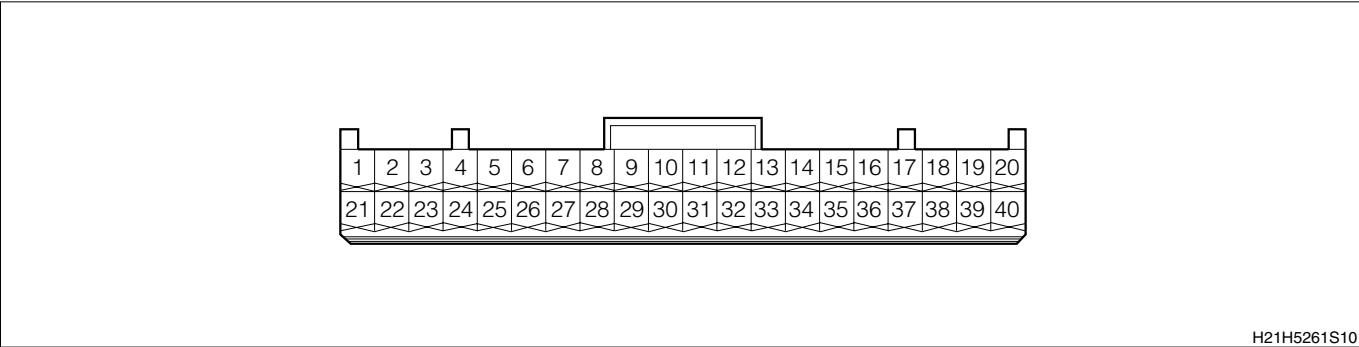
(1) System circuit diagram



Inside/outside air door switching servo motor connected vehicle harness side connector



Auto A/C ECU connected vehicle harness side connector



(2) Checking points

1. Ensure that auto A/C ECU is normal.
2. Ensure that inside/outside air door switching servo motor is normal.
3. Ensure that the connection between the inside/outside air door switching servo motor and the auto A/C ECU is normal.

(3) Checking procedure**▷1. Unit check of inside/outside air switching servo motor**

1. Perform the unit check of the inside/outside air door switching servo motor.

Refer to Page K1-77.

▼ If it is OK, go to ▷2.

▼ If it is NG, replace the inside/outside air switching servo motor.

Refer to Page K1-19.

▷2. Wire harness check

1. Check the conduction and GND short for the following wire harnesses.

- (1) Between motor connected vehicle harness side connector 1 (VZ) and auto A/C ECU connected vehicle harness side connector 11 (TPI-S5)
- (2) Between motor connected vehicle harness side connector 3 (PT) and auto A/C ECU connected vehicle harness side connector 3 (TPI)
- (3) Between motor connected vehicle harness side connector 2 (GND) and auto A/C ECU connected vehicle harness side connector 13 (TPI-SG)
- (4) Between motor connected vehicle harness side connector 4 (REC) and auto A/C ECU connected vehicle harness side connector 37 (REC)
- (5) Between motor connected vehicle harness side connector 5 (FRS) and auto A/C ECU connected vehicle harness side connector 38 (FRS)

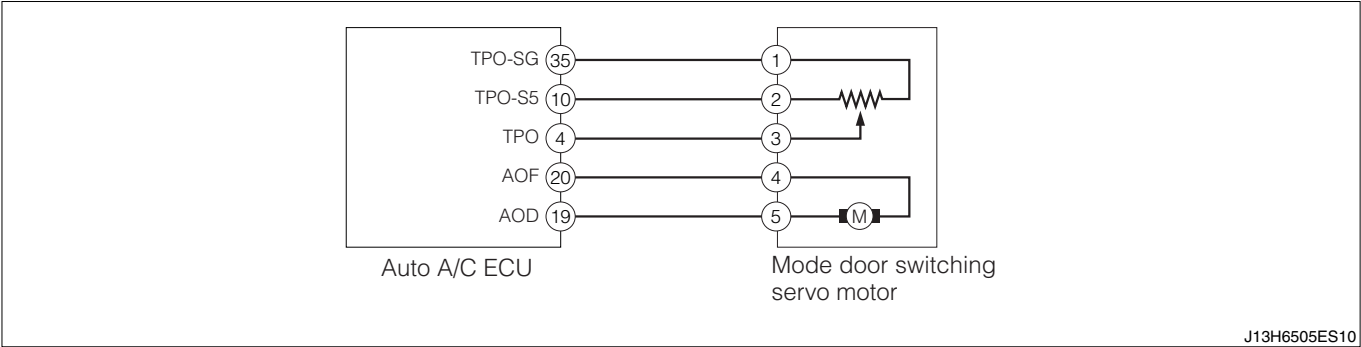
SPECIFIED VALUE: There is conduction between each terminal, and there is no GND short.

▼ If it is OK, check the auto A/C ECU and replace it if necessary.

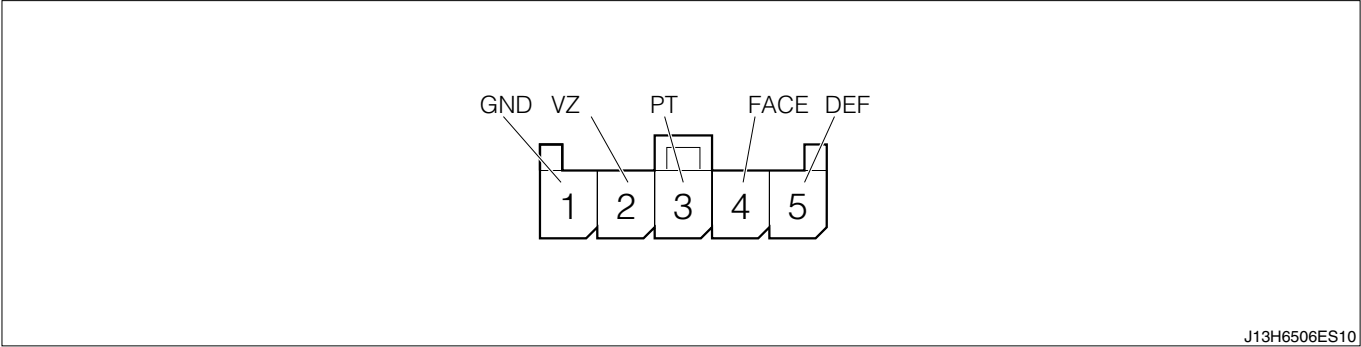
▼ If it is NG, repair or replace the wire harnesses or connectors.

11-10-5 NO.43 (SYSTEM ABNORMALITY IN MODE DOOR SWITCHING SERVO MOTOR)

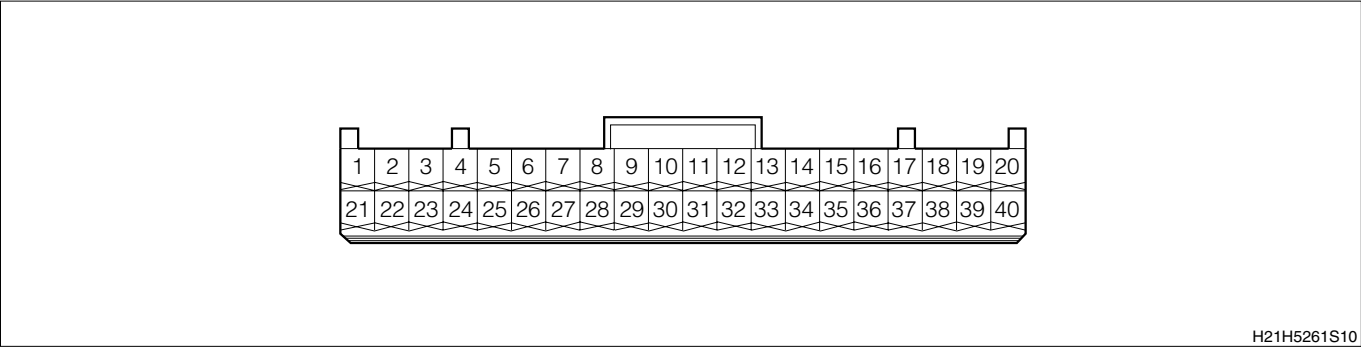
(1) System circuit diagram



Mode door switching servo motor connected vehicle harness side connector



Auto A/C ECU connected vehicle harness side connector



(2) Checking points

1. Ensure that auto A/C ECU is normal.
2. Ensure that mode door switching servo motor is normal.
3. Ensure that the connection between the mode door switching servo motor and the auto A/C ECU is normal.

(3) Checking procedure**▷1. Unit check of mode door switching servo motor**

1. Perform the unit check of the mode door switching servo motor.

Refer to Page K1-79.

▼ If it is OK, go to ▷2.

▼ If it is NG, replace the mode door switching servo motor.

Refer to Page K1-17.

▷2. Wire harness check

1. Check the conduction and GND short for the following wire harnesses.

- (1) Between motor connected vehicle harness side connector 2 (VZ) and auto A/C ECU connected vehicle harness side connector 10 (TPO-S5)
- (2) Between motor connected vehicle harness side connector 3 (PT) and auto A/C ECU connected vehicle harness side connector 4 (TPO)
- (3) Between motor connected vehicle harness side connector 1 (GND) and auto A/C ECU connected vehicle harness side connector 35 (TPO-SG)
- (4) Between motor connected vehicle harness side connector 4 (FACE) and auto A/C ECU connected vehicle harness side connector 20 (AOF)
- (5) Between motor connected vehicle harness side connector 5 (DEF) and auto A/C ECU connected vehicle harness side connector 19 (AOD)

SPECIFIED VALUE: There is conduction between each terminal, and there is no GND short.

▼ If it is OK, check the auto A/C ECU and replace it if necessary.

▼ If it is NG, repair or replace the wire harnesses or connectors.

11-10-6 NO.99 (CAN COMMUNICATION SYSTEM ABNORMALITY)

(1) Checking procedure

▷1. Reading of DS-II data

1. Display the [CAN bus connection ECU confirmation] screen of the DS-II.

| | |
|---|--|
| A | The indication [Auto A/C] is not displayed on the screen. (The indication [EFI] is displayed.) |
| B | Any ECU indication is not displayed. |

- ▼ For the case A, perform troubleshooting (CAN communication system) for auto A/C ECU communication abnormality.

Refer to Page L2-1.

- ▼ For the case B, go to ▷2.

▷2. Confirmation of diagnosis codes

1. Remove the DS-II from DLC.
2. Read the CAN related diagnosis codes displayed in LCD at combination meter.

| | |
|---|--|
| A | The diagnosis code "0051" is output. |
| B | The diagnosis code "0056" is output. |
| C | CAN related diagnosis codes other than the above are output. |
| D | No diagnosis code is output. |

- ▼ For the case A, perform troubleshooting (CAN communication system) for EFI ECU communication abnormality.

Refer to Page L2-7.

- ▼ For the case B, perform troubleshooting (CAN communication system) for auto A/C ECU communication abnormality.

Refer to Page L2-7.

- ▼ For the case C, go to the relevant diagnosis code.

Refer to Page L2-7.

- ▼ For the case D, go to the CAN communication basic check.

Refer to Page L2-7.

11-11 TROUBLE SHOOTING ACCORDING TO MALFUNCTION PHENOMENA**11-11-1 DESCRIPTION**

If any automatic air conditioner system related diagnosis code is not output or if the malfunctioning system cannot be determined, narrow down the malfunctioning system and its cause according to the contents of the inquiry and the phenomenon of the abnormality to be confirmed.

11-11-2 NARROWING DOWN OF THE PHENOMENON, SYSTEM, AND CAUSE OF MALFUNCTION

Narrow down the cause of the malfunction, using the malfunction causes assumption table, according to the result of the inquiry.

Malfunction causes assumption table

| Malfunction phenomenon | Malfunction No. |
|--|-----------------------|
| Cannot turn the A/C on or off. | 12 |
| Cannot turn the heater and air conditioner system off. | 12 |
| The indicator check starts. | 12 |
| Cannot turn to the auto mode. | 12 |
| The illumination of each SW on the control panel does not come on. | 12 |
| The compressor is turned off. | 12 |
| The setting temperature is not displayed or changed. | 12 |
| The sensor check starts. | 12 |
| Cannot turn the defroster on or off. | 12 |
| The mode switches between inside air and outside air continuously. | 4, 12 |
| Cannot switch the mode between inside air and outside air. | 4, 12 |
| The temperature at air outlet ports does not change. | 2, 6, 7, 8, 9, 10, 12 |
| The directions of the air outlet ports do not change. | 3, 12 |
| The blower motor does not operate/switch. | 1, 5, 12 |
| Cannot turn the magnet clutch on or off. | 1, 5, 9, 11, 12 |
| Poor cooling performance | * |

*:In the case of poor cooling performance, determine the malfunctioning parts after referring to the following contents, since malfunctioning system couldn't be determined indiscriminately.

Refer to Page K1-49.

List of malfunction systems and their causes

| Malfunction No. | Malfunction system |
|-----------------|--|
| 1 | Blower motor system |
| 2 | System abnormality in air mixture door switching servo motor |
| 3 | Mode door switching servo motor system |
| 4 | Inside/outside air door switching servo motor system |
| 5 | Compressor magnet clutch system |
| 6 | Insolation sensor system |
| 7 | Water temperature system |
| 8 | Outside air temperature sensor system |
| 9 | Evaporator temperature sensor system |
| 10 | Inside air sensor system |
| 11 | Refrigerant pressure SW system |
| 12 | Air conditioner control panel system |

1. Determine the malfunctioning parts while performing the troubleshooting for each malfunctioning system and its cause that were narrowed down.

Refer to Page K1-51.

NOTE

- When each system has been checked and all the system have determined as normal, the auto A/C ECU can be assumed as the malfunctioning part. In this case, replace the auto A/C ECU with a new one and confirm that the malfunction phenomenon occurs again. In addition, for the systems of which the EFI ECU is interposed between the system and the automatic air conditioner ECU, check the relevant EFI ECU, etc. and replace them if necessary, and then confirm that the malfunction phenomenon occurs again if the malfunction has not been restored even if the auto A/C ECU was replaced.

11-11-3 TROUBLESHOOTING ACCORDING TO MALFUNCTION PHENOMENON ITEMS

▷1. Check of cooling performance

1. Check the cooling performance.

Refer to TERIOS SERVICE MANUAL

▼ If it is OK, there is no problem with the cooling performance.

▼ If it is NG, go to ▷3.

▷2. Operation check of compressor

1. Check the operation of the compressor when the A/C SW is turned on.

SPECIFIED VALUE: The magnet clutch is turned on and the compressor is activated.

▼ If it is OK, go to ▷4.

▼ If it is NG, perform the troubleshooting of the "Compressor magnet clutch is not turned on".

Refer to Page K1-49.

▷3. Operation check of radiator fan

1. Check the operation of the radiator fan when the compressor is turned on.

SPECIFIED VALUE: The fan turns.

▼ If it is OK, go to ▷5.

▼ If it is NG, check the radiator fan circuit.

Refer to Page B8-168.

▷4. Operation check of blower motor

1. Check the operation of the blower motor.

SPECIFIED VALUE: The air flow rate changes according to the operation of the blower SW.

▼ If it is OK, go to ▷6.

▼ If it is NG, perform the troubleshooting of the "Blower motor does not operate/switch".

Refer to Page K1-49.

▷5. Operation check of air mixture door

1. Check the operation of the air mixture door.

SPECIFIED VALUE: When the temperature setting is the MAX COOL position: The door link shall be the MAX COOL position

NOTE

- The door link can check visually from the side of the air conditioner unit.

▼ If it is OK, go to ▷6.

▼ If it is NG, perform the troubleshooting of the "Temperature at air outlet ports does not change".

Refer to Page K1-49.

▷6. Measurement of refrigerant pressure

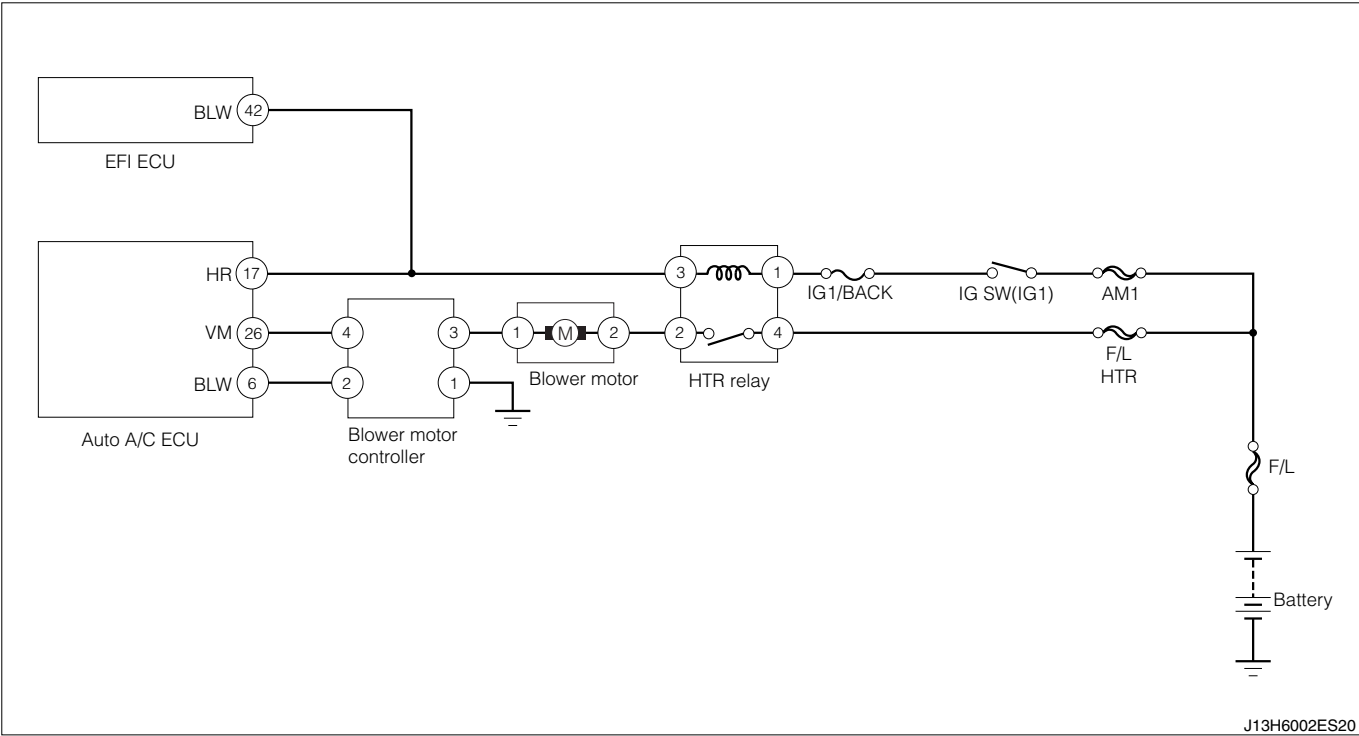
1. Perform measurement of refrigerant.

Refer to TERIOS SERVICE MANUAL

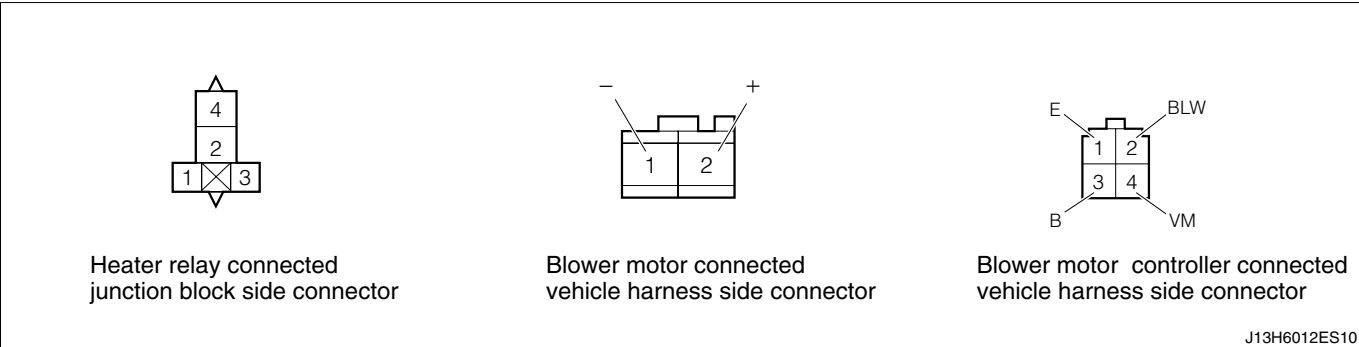
11-12TROUBLE SHOOTING ACCORDING TO SYSTEM

11-12-1 CHECK OF BLOWER MOTOR SYSTEM

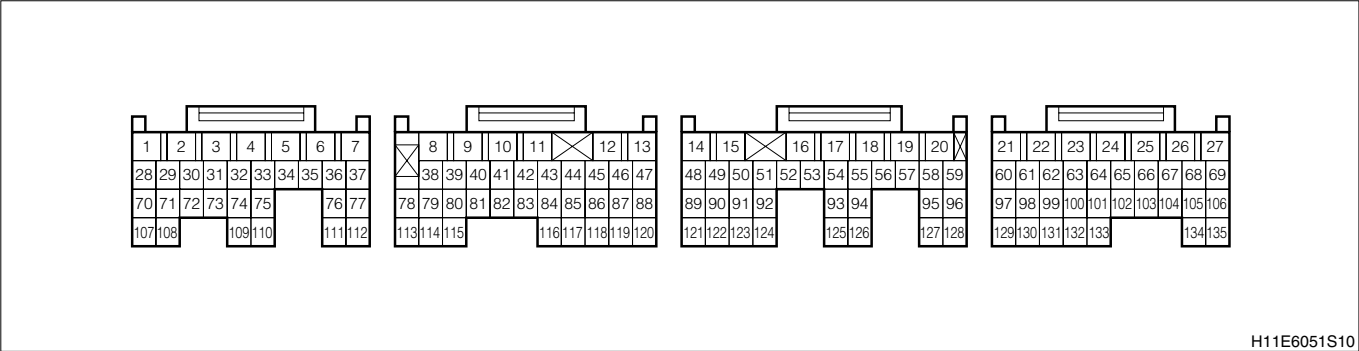
(1) System circuit diagram



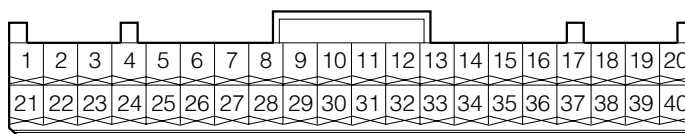
Each unit connected vehicle harness side connector



EFI ECU connected vehicle harness side connector



Auto A/C ECU connected vehicle harness side connector



H21H5261S10

(2) Checking points

1. Ensure that heater relay is normal.
2. Ensure that blower motor is normal.
3. Ensure that blower motor controller is normal.
4. Ensure that the power supply voltage for the heater relay is normal.
5. Ensure that the wire harness between the heater relay and the EFI ECU is normal.
6. Ensure that the wire harness between the heater relay and the EFI ECU is normal.
7. Ensure that the wire harness between the heater relay and the blower motor is normal.
8. Ensure that the wire harness between the blower motor and the blower motor controller is normal.
9. Ensure that the wire harness between the blower motor controller and the auto A/C ECU is normal.

(3) Checking procedure**▷1. Unit check of heater relay**

1. Perform the unit check of the heater relay.

Refer to TERIOS SERVICE MANUAL

▼ If it is OK, go to ▷2.▼ If it is NG, replace the heater relay.**▷2. Unit check of blower motor**

1. Perform the unit check of the blower motor.

Refer to TERIOS SERVICE MANUAL

▼ If it is OK, go to ▷3.▼ If it is NG, replace the blower motor.**Refer to Page K1-15.****▷3. Unit check of blower motor controller**

1. Perform the unit check of the blower motor controller.

Refer to Page K1-81.▼ If it is OK, go to ▷4.▼ If it is NG, replace the blower motor controller.**Refer to Page K1-16.**

▷4. Voltage check of heater relay

1. Set the IG SW to ON, and measure the voltage between the terminals shown below.
 - (1) Between heater relay connected junction block side connector 1 and body earth
 - (2) Between heater relay connected junction block side connector 4 and body earth

SPECIFIED VALUE: 10 – 14V

▼ If it is OK, go to ▷5.

▼ If it is NG, check the wire harness or connector between the terminals shown below and repair them if necessary.

- (3) Between heater relay and battery

▷5. Wire harness check (1)

1. Check the conduction and GND short for the following wire harnesses.
 - (1) Between heater relay connected junction block side connector 3 and EFI ECU connected vehicle harness side connector 42 (BLW)
 - (2) Between heater relay connected junction block side connector 3 and auto A/C ECU connected vehicle harness side connector 17 (HR)
 - (3) Between heater relay connected junction block side connector 2 and blower motor connected vehicle harness side connector 2 (+)

SPECIFIED VALUE: There is conduction between each terminal, and there is no GND short.

▼ If it is OK, go to ▷6.

▼ If it is NG, repair or replace the wire harnesses or connectors of the malfunctioning sections.

▷6. Wire harness check (2)

1. Check the conduction and GND short for the following wire harnesses.
 - (1) Between blower motor connected vehicle harness side connector 1 (–) and blower motor controller connected vehicle harness side connector 3 (B)

SPECIFIED VALUE: There is conduction between each terminal, and there is no GND short.

▼ If it is OK, go to ▷7.

▼ If it is NG, repair or replace the wire harnesses or connectors of the malfunctioning sections.

▷7. Wire harness check (3)

1. Check the conduction and GND short for the following wire harnesses.
 - (1) Between blower motor controller connected vehicle harness side connector 2 (BLW) and auto A/C ECU connected vehicle harness side connector 6 (BLW)
 - (2) Between blower motor controller connected vehicle harness side connector 4 (VM) and auto A/C ECU connected vehicle harness side connector 26 (VM)

SPECIFIED VALUE: There is conduction between each terminal, and there is no GND short.

▼ If it is OK, go to ▷8.

▼ If it is NG, repair or replace the wire harnesses or connectors of the malfunctioning sections.

▷8. Wire harness check (4)

1. Check the conduction of the following wire harnesses.
 - (1) Between blower motor controller connected vehicle harness side connector 1 (E) and body earth

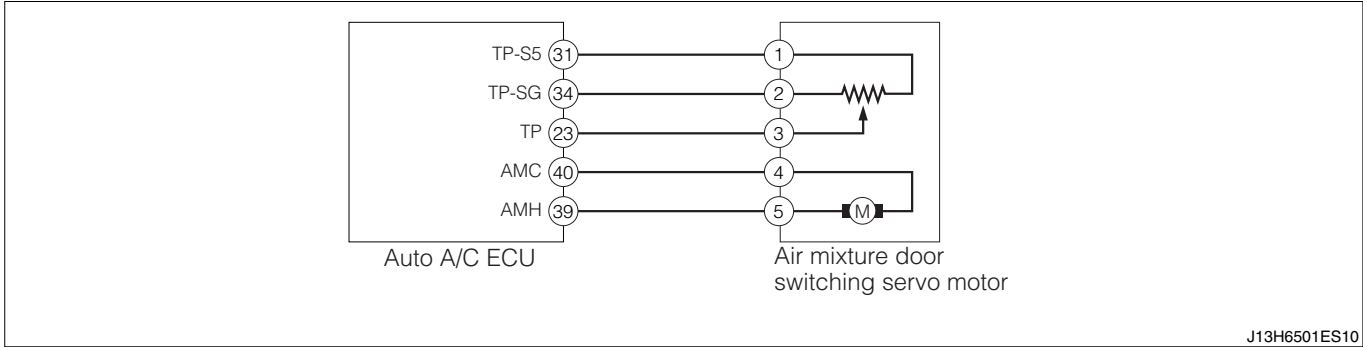
SPECIFIED VALUE: Conduction

▼ If it is OK, end troubleshooting.

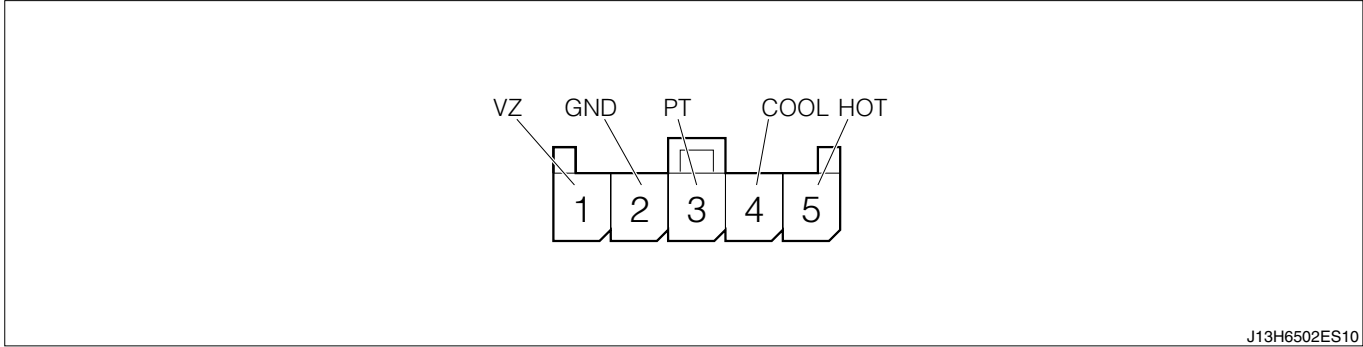
▼ If it is NG, repair or replace the wire harnesses or connectors.

11-12-2 CHECK OF AIR MIXTURE DOOR SWITCHING SERVO MOTOR SYSTEM

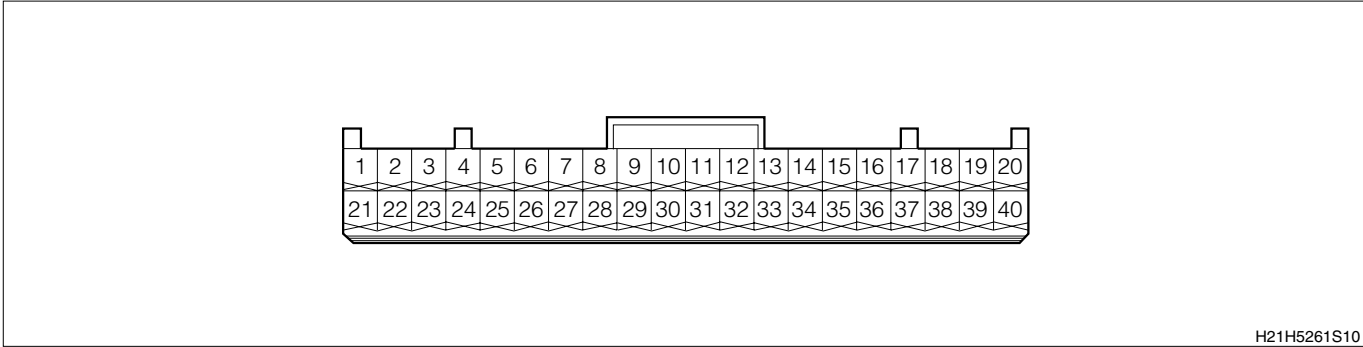
(1) System circuit diagram



Air mixture door switching servo motor connected vehicle harness side connector



Auto A/C ECU connected vehicle harness side connector



(2) Checking points

1. Ensure that air mixture door switching servo motor is normal.
2. Ensure that the wire harness between the air mixture door switching servo motor and the auto A/C ECU is normal.

(3) Checking procedure

▷1. Unit check of air mixture door switching servo motor

1. Perform the unit check of the air mixture door switching servo motor.

Refer to Page K1-80.

▼ If it is OK, go to ▷2.

▼ If it is NG, replace the air mixture door switching servo motor.

Refer to Page K1-18.

▷2. Wire harness check

1. Check the conduction and GND short for the following wire harnesses.

- (1) Between motor connected vehicle harness side connector 1 (VZ) and auto A/C ECU connected vehicle harness side connector 31 (TP-S5)
- (2) Between motor connected vehicle harness side connector 3 (PT) and auto A/C ECU connected vehicle harness side connector 23 (TP)
- (3) Between motor connected vehicle harness side connector 2 (GND) and auto A/C ECU connected vehicle harness side connector 34 (TP-SG)
- (4) Between motor connected vehicle harness side connector 4 (COOL) and auto A/C ECU connected vehicle harness side connector 40 (AMC)
- (5) Between motor connected vehicle harness side connector 5 (HOT) and auto A/C ECU connected vehicle harness side connector 39 (AMH)

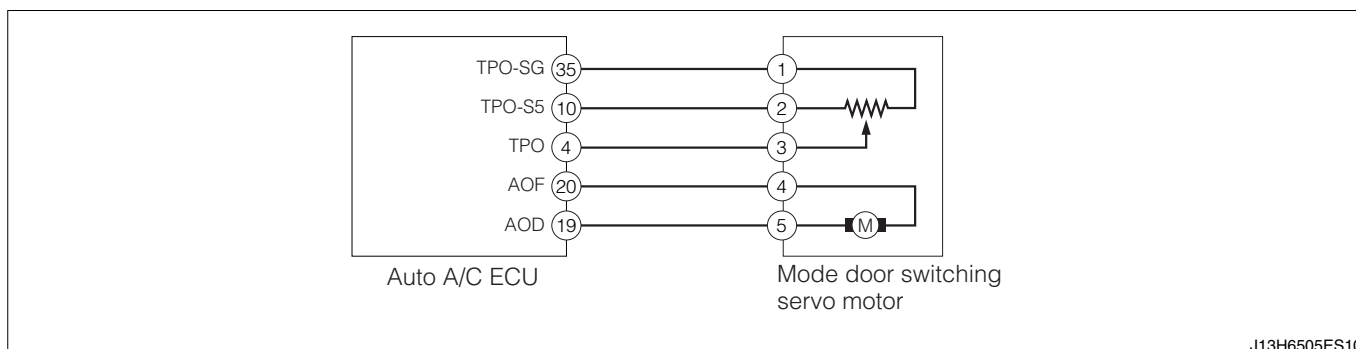
SPECIFIED VALUE: There is conduction between each terminal, and there is no GND short.

▼ If it is OK, end troubleshooting.

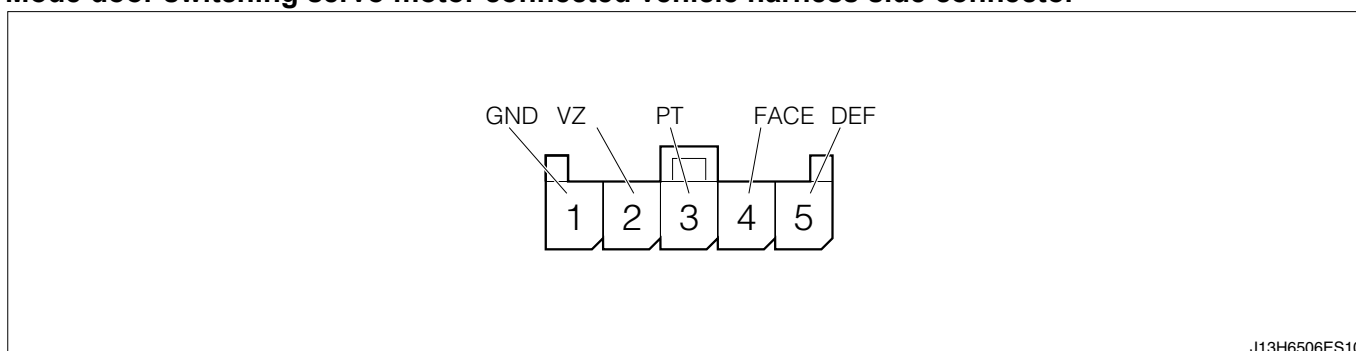
▼ If it is NG, repair or replace the wire harnesses or connectors.

11-12-3 CHECK OF MODE DOOR SWITCHING SERVO MOTOR SYSTEM

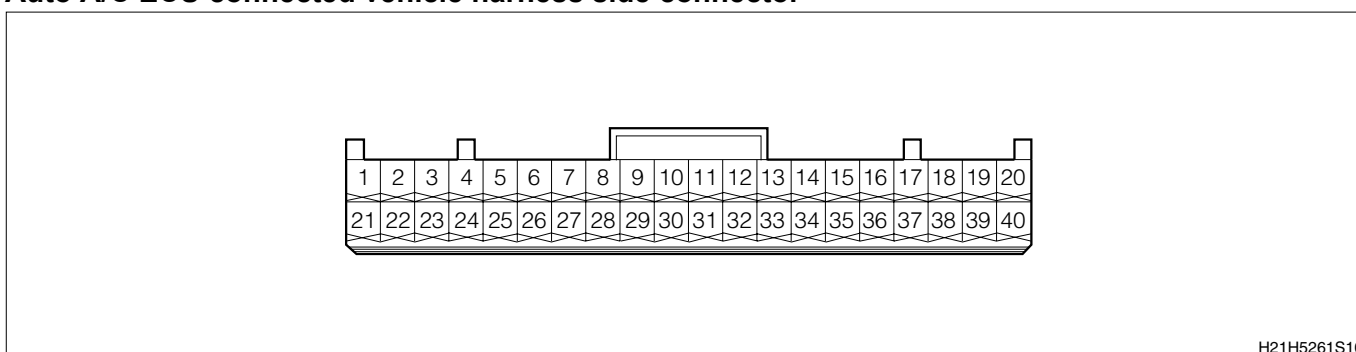
(1) System circuit diagram



Mode door switching servo motor connected vehicle harness side connector



Auto A/C ECU connected vehicle harness side connector



(2) Checking points

1. Ensure that mode door switching servo motor is normal.
2. Ensure that the wire harness between the mode door switching servo motor and the auto A/C ECU is normal.

(3) Checking procedure

▷1. Unit check of mode door switching servo motor

1. Perform the unit check of the mode door switching servo motor.

Refer to Page K1-79.

▼ If it is OK, go to ▷2.

▼ If it is NG, replace the mode door switching servo motor.

Refer to Page K1-17.

▷2. Wire harness check

1. Check the conduction and GND short for the following wire harnesses.

- (1) Between motor connected vehicle harness side connector 2 (VZ) and auto A/C ECU connected vehicle harness side connector 10 (TPO-S5)
- (2) Between motor connected vehicle harness side connector 3 (PT) and auto A/C ECU connected vehicle harness side connector 4 (TPO)
- (3) Between motor connected vehicle harness side connector 1 (GND) and auto A/C ECU connected vehicle harness side connector 35 (TPO-SG)
- (4) Between motor connected vehicle harness side connector 4 (FACE) and auto A/C ECU connected vehicle harness side connector 20 (AOF)
- (5) Between motor connected vehicle harness side connector 5 (DEF) and auto A/C ECU connected vehicle harness side connector 19 (AOD)

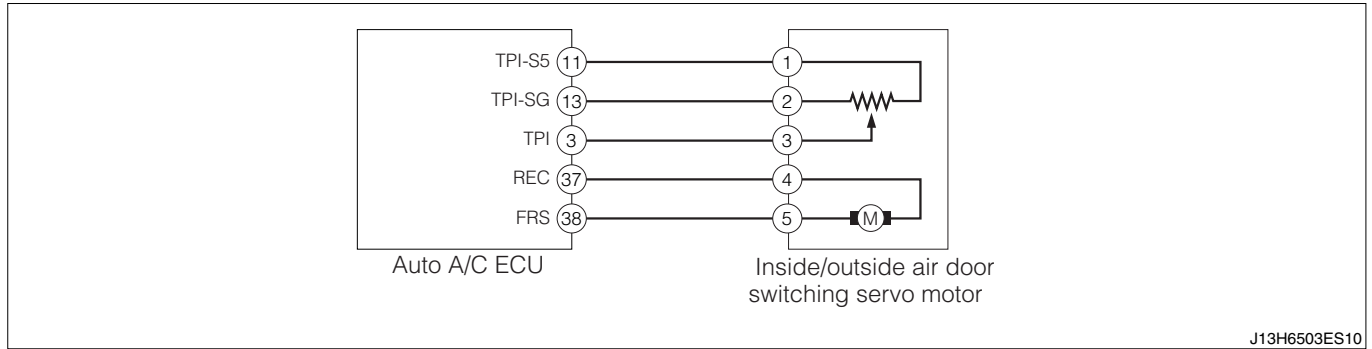
SPECIFIED VALUE: There is conduction between each terminal, and there is no GND short.

▼ If it is OK, end troubleshooting.

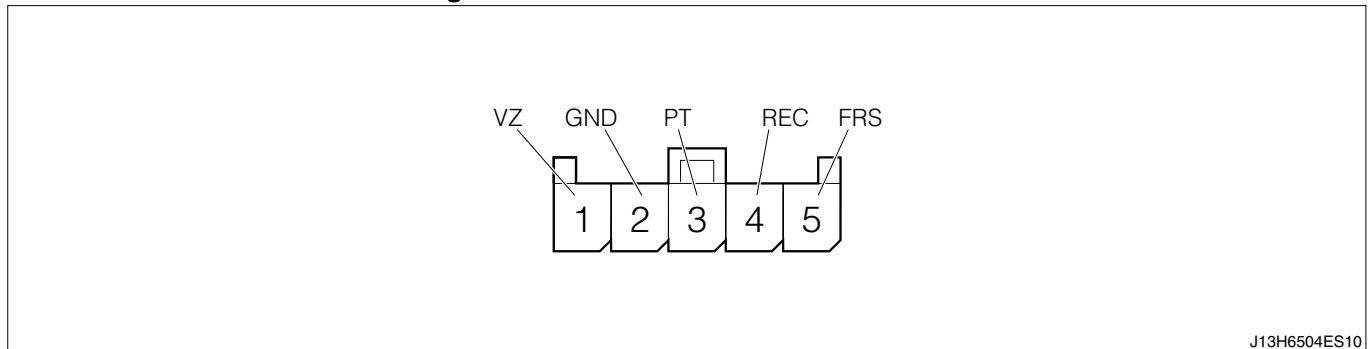
▼ If it is NG, repair or replace the wire harnesses or connectors.

11-12-4 CHECK OF INSIDE/OUTSIDE AIR DOOR SWITCHING SERVO MOTOR SYSTEM

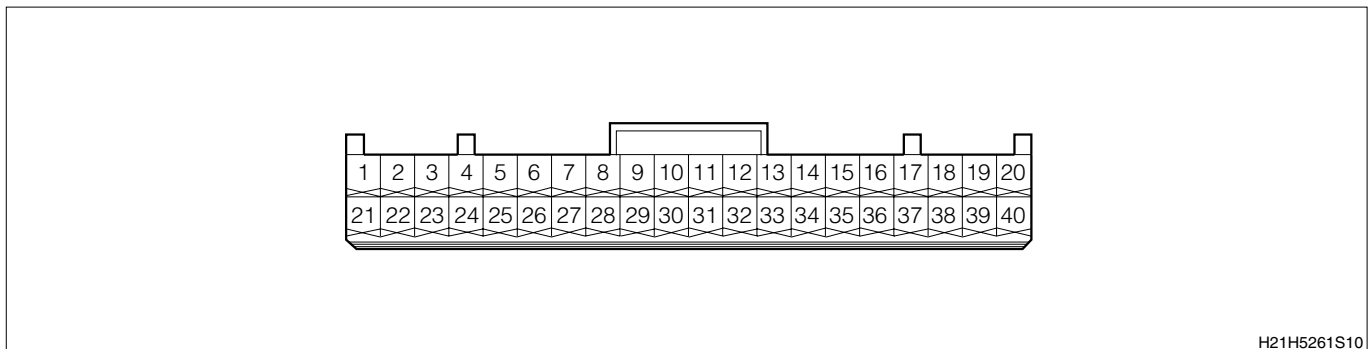
(1) System circuit diagram



Inside/outside air door switching servo motor connected vehicle harness side connector



Auto A/C ECU connected vehicle harness side connector



(2) Checking points

1. Ensure that inside/outside air door switching servo motor is normal.
2. Ensure that the wire harness between the inside/outside air door switching servo motor and the auto A/C ECU is normal.

(3) Checking procedure

▷1. Unit check of inside/outside air door switching servo motor

1. Perform the unit check of the inside/outside air door switching servo motor.

Refer to Page K1-77.

▼ If it is OK, go to ▷2.

▼ If it is NG, replace the inside/outside air door switching servo motor.

Refer to Page K1-19.

▷2. Wire harness check

1. Check the conduction and GND short for the following wire harnesses.

- (1) Between motor connected vehicle harness side connector 1 (VZ) and auto A/C ECU connected vehicle harness side connector 11 (TPI-S5)
- (2) Between motor connected vehicle harness side connector 3 (PT) and auto A/C ECU connected vehicle harness side connector 3 (TPI)
- (3) Between motor connected vehicle harness side connector 2 (GND) and auto A/C ECU connected vehicle harness side connector 13 (TPI-SG)
- (4) Between motor connected vehicle harness side connector 4 (REC) and auto A/C ECU connected vehicle harness side connector 37 (REC)
- (5) Between motor connected vehicle harness side connector 5 (FRS) and auto A/C ECU connected vehicle harness side connector 38 (FRS)

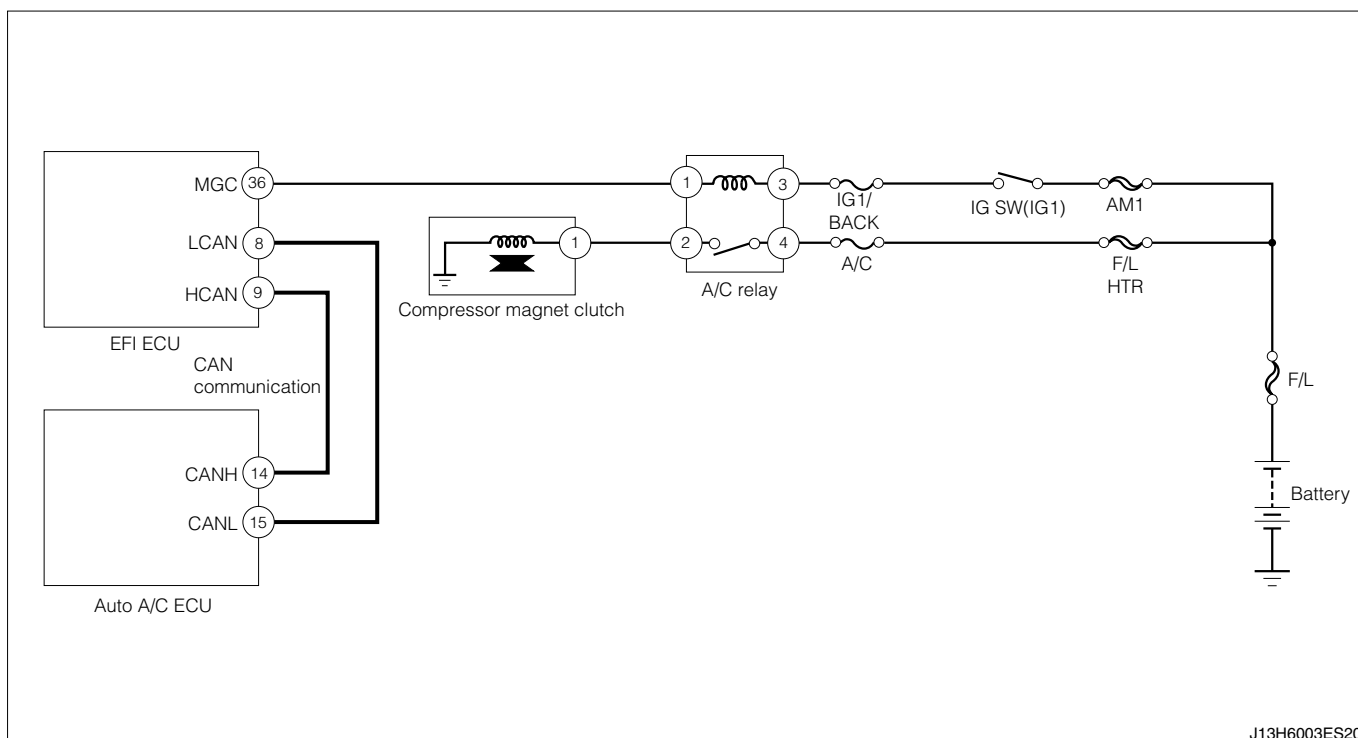
SPECIFIED VALUE: There is conduction between each terminal, and there is no GND short.

▼ If it is OK, check the auto A/C ECU and replace it if necessary.

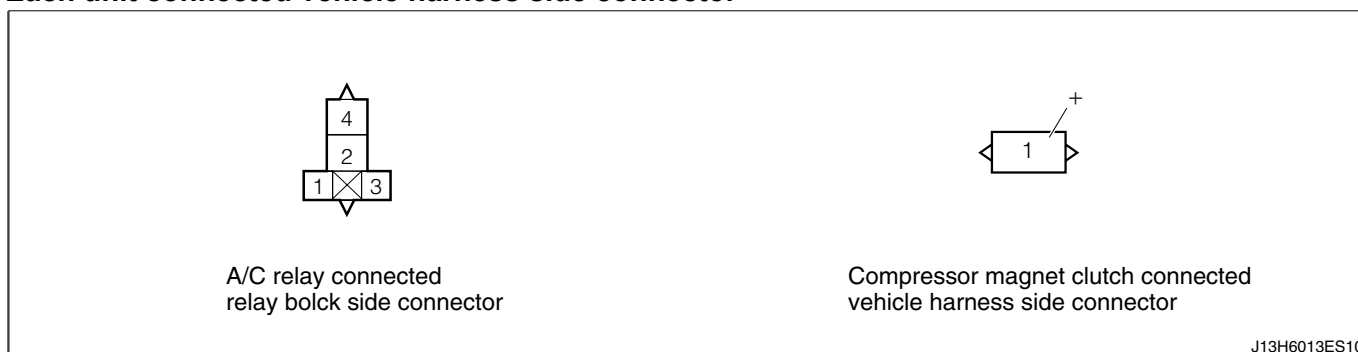
▼ If it is NG, repair or replace the wire harnesses or connectors.

11-12-5 CHECK OF COMPRESSOR MAGNET CLUTCH SYSTEM

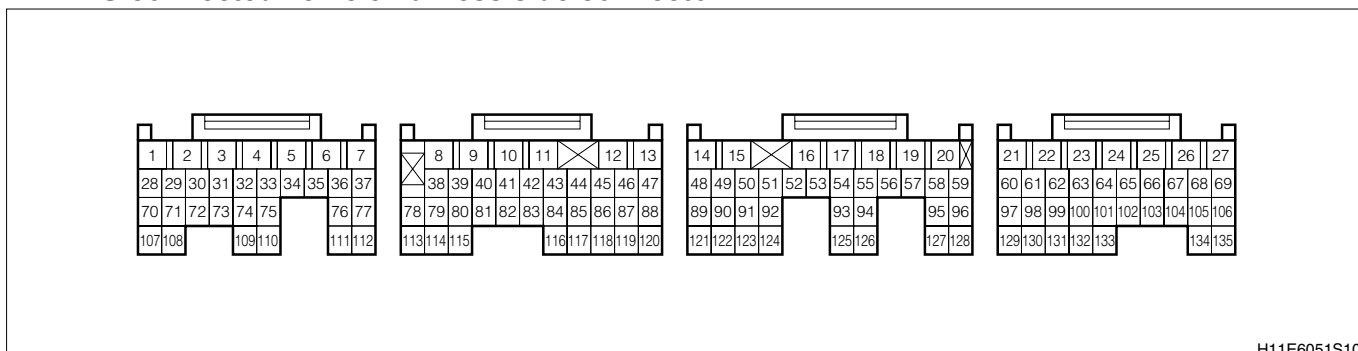
(1) System circuit diagram



Each unit connected vehicle harness side connector

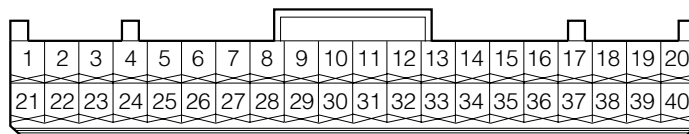


EFI ECU connected vehicle harness side connector



K1-61

Auto A/C ECU connected vehicle harness side connector



H21H5261S10

(2) Checking points

1. Ensure that the CAN communication line is normal.
2. Ensure that compressor magnet clutch is normal.
3. Ensure that A/C relay function normal.
4. Ensure that the power supply voltage for the A/C relay is normal.
5. Ensure that the wire harness between the A/C relay and the EFI ECU is normal.
6. Ensure that the wire harness between the A/C relay and the compressor magnet clutch is normal.

(3) Checking procedure

▷1. CAN communication basic check

1. Perform the basic check of the CAN communication.

Refer to Page L2-8.

▼ If it is OK, go to ▷2.

▼ If it is NG, repair or replace the malfunctioning sections.

▷2. Unit check of compressor magnet clutch

1. Perform the unit check of the compressor magnet clutch.

Refer to TERIOS SERVICE MANUAL

▼ If it is OK, go to ▷3.

▼ If it is NG, replace the compressor magnet clutch.

Refer to TERIOS SERVICE MANUAL

▷3. Unit check of A/C relay

1. Perform the unit check of the A/C relay.

Refer to Page K1-82.

▼ If it is OK, go to ▷4.

▼ If it is NG, replace the A/C relay.

▷4. Voltage check of A/C relay

1. Set the IG SW to ON, and measure the voltage between the terminals shown below.

(1) Between A/C relay connected junction block side connector 3 and body earth

(2) Between A/C relay connected junction block side connector 4 and body earth

SPECIFIED VALUE: 10 – 14V

▼ If it is OK, go to ▷5.

▼ If it is NG, repair or replace the wire harnesses or connectors of the sections between the terminals shown below.

(3) Between A/C relay and battery

➤ **5. Wire harness check**

1. Check the conduction and GND short for the following wire harnesses.

- (1) Between A/C relay connected relay block side connector 1 and EFI ECU connected vehicle harness side connector 36 (MGC)
- (2) Between A/C relay connected relay block side connector 2 and compressor magnet clutch connected vehicle harness side connector 1 (+)

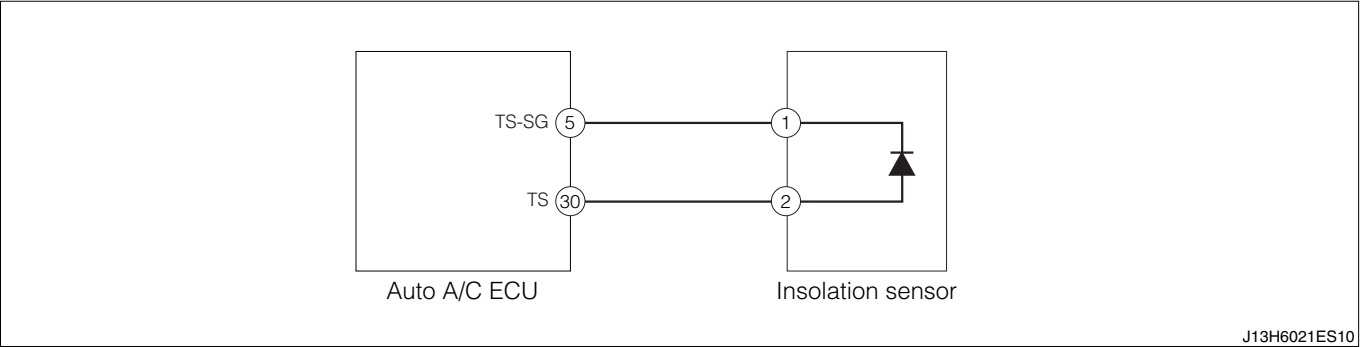
SPECIFIED VALUE: There is conduction between each terminal, and there is no GND short.

▼ If it is OK, end troubleshooting.

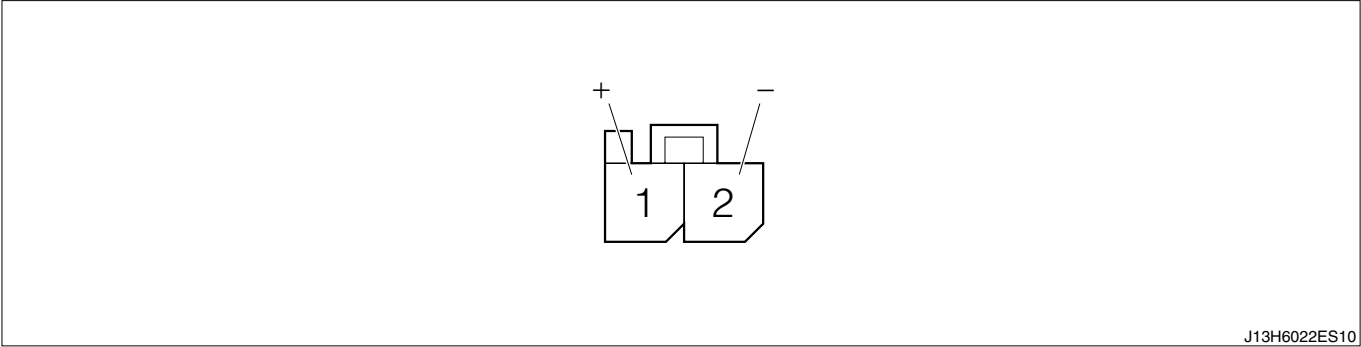
▼ If it is NG, repair or replace the wire harnesses or connectors of the malfunctioning sections.

11-12-6 CHECK OF INSOLATION SENSOR SYSTEM

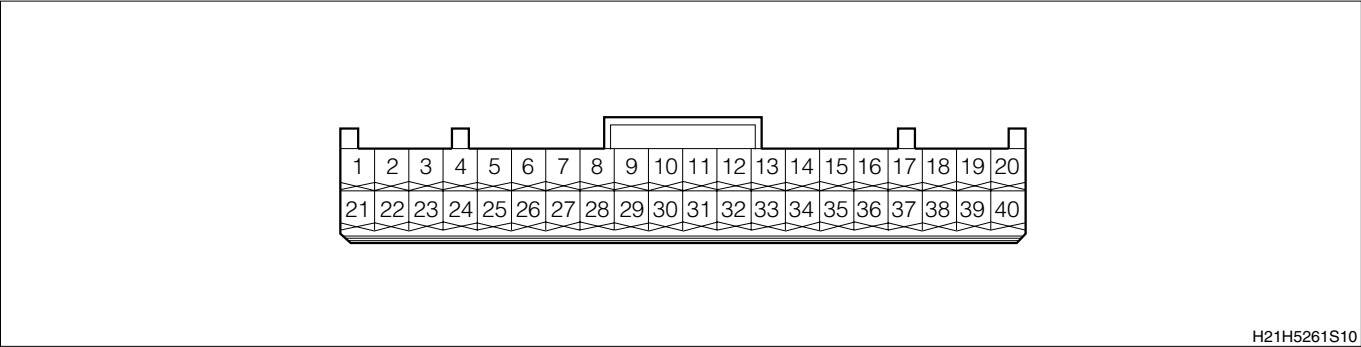
(1) System circuit diagram



Insolation sensor connected vehicle harness side connector



Auto A/C ECU connected vehicle harness side connector



(2) Checking points

- 1. Ensure that insolation sensor is normal.
- 2. Ensure that the wire harness between the insolation sensor and the auto A/C ECU is normal.

(3) Checking procedure**▷1. Unit check of insolation sensor**

1. Perform the unit check of the insolation sensor.

Refer to Page K1-81.

▼ If it is OK, go to ▷2.

▼ If it is NG, replace the insolation sensor.

Refer to Page K1-21.

▷2. Wire harness check

1. Check the conduction and GND short for the following wire harnesses.

- (1) Between insolation sensor connected vehicle harness side connector 1 (+) and auto A/C ECU connected vehicle harness side connector 5 (TS-SG)
- (2) Between insolation sensor connected vehicle harness side connector 2 (–) and auto A/C ECU connected vehicle harness side connector 30 (TS)

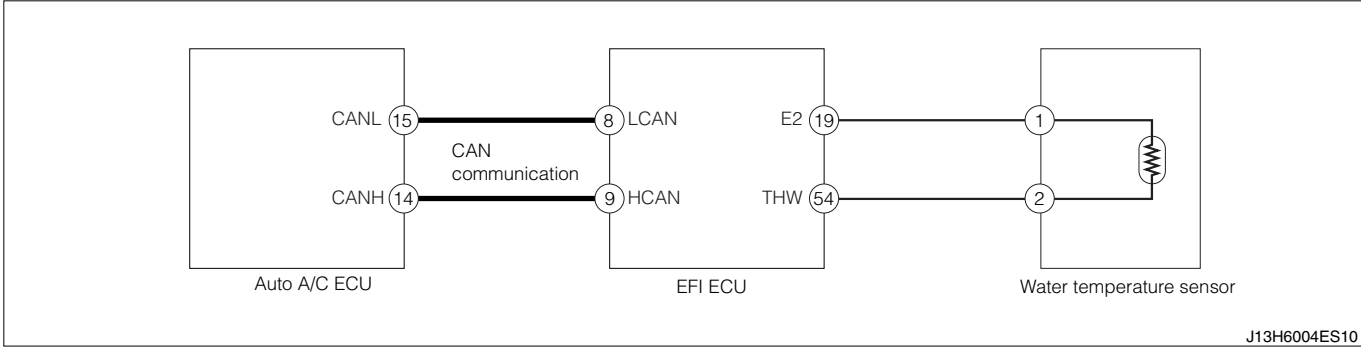
SPECIFIED VALUE: There is conduction between each terminal, and there is no GND short.

▼ If it is OK, end troubleshooting.

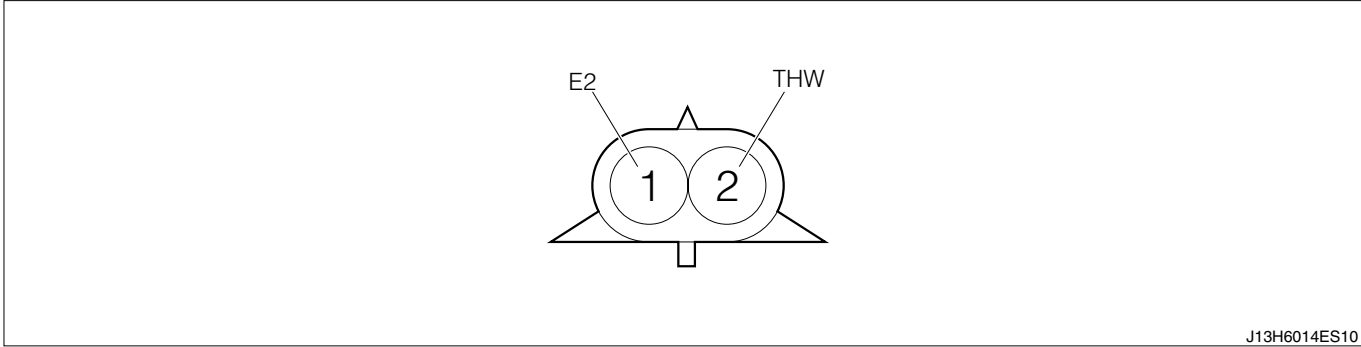
▼ If it is NG, repair or replace the wire harnesses or connectors.

11-12-7 CHECK OF WATER TEMPERATURE SENSOR SYSTEM

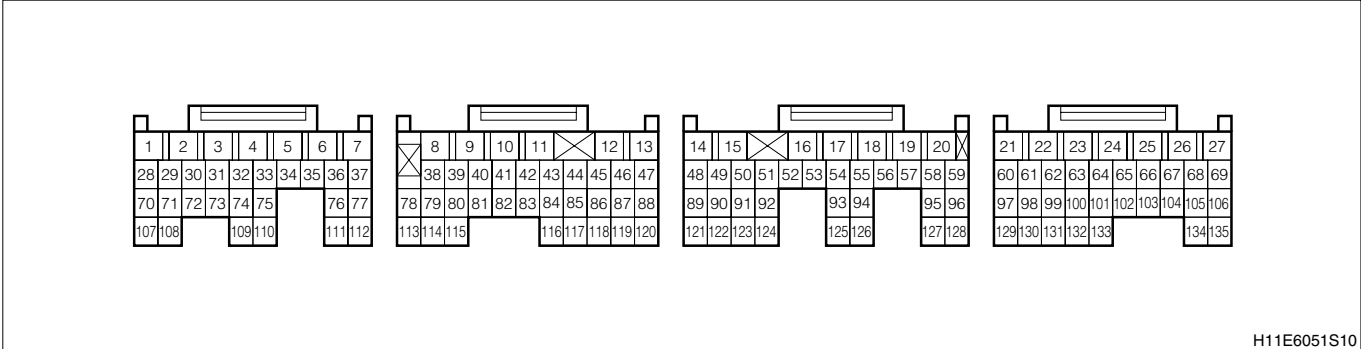
(1) System circuit diagram



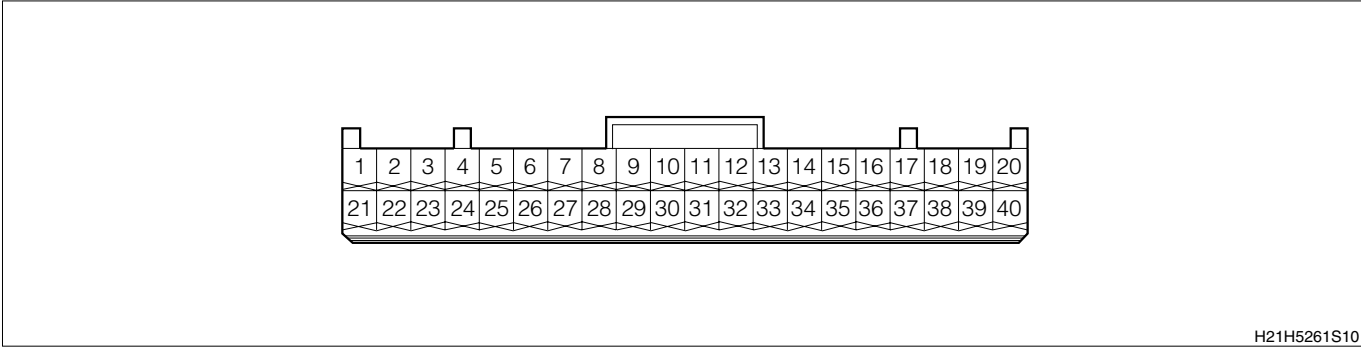
Water temperature sensor connected vehicle harness side connector



EFI ECU connected vehicle harness side connector



Auto A/C ECU connected vehicle harness side connector



(2) Checking points

- 1. Ensure that the CAN communication line is normal.
- 2. Ensure that water temperature sensor is normal.
- 3. Ensure that the wire harness between the water temperature sensor and the EFI ECU is normal.

(3) Checking procedure**▷1. CAN communication basic check**

1. Perform the basic check of the CAN communication.

Refer to Page L2-8.

▼ If it is OK, go to ▷2.

▼ If it is NG, repair or replace the malfunctioning sections.

▷2. Check of diagnosis code

1. Read out the engine related diagnosis codes, using DS-II.

| | |
|---|---|
| A | The diagnosis code "P0115" is output. |
| B | The engine related diagnosis codes other than the above are output. |
| C | No diagnosis code is output. |

▼ For the case A, perform troubleshooting by each diagnosis code (Engine control system).

Refer to Page B8-48.

▼ For the case B, go to the relevant diagnosis code.

Refer to Page B8-31.

▼ For the case C, go to ▷3.

▷3. Unit check of water temperature sensor

1. Perform the unit check of the water temperature sensor.

Refer to Page B8-179.

▼ If it is OK, go to ▷4.

▼ If it is NG, replace the water temperature sensor.

Refer to TERIOS SERVICE MANUAL

▷4. Wire harness check

1. Check the conduction and GND short for the following wire harnesses.

- (1) Between water temperature sensor connected vehicle harness side connector 1 (E2) and EFI ECU connected vehicle harness side connector 19 (E2)
- (2) Between water temperature sensor connected vehicle harness side connector 2 (THW) and EFI ECU connected vehicle harness side connector 54 (THW)

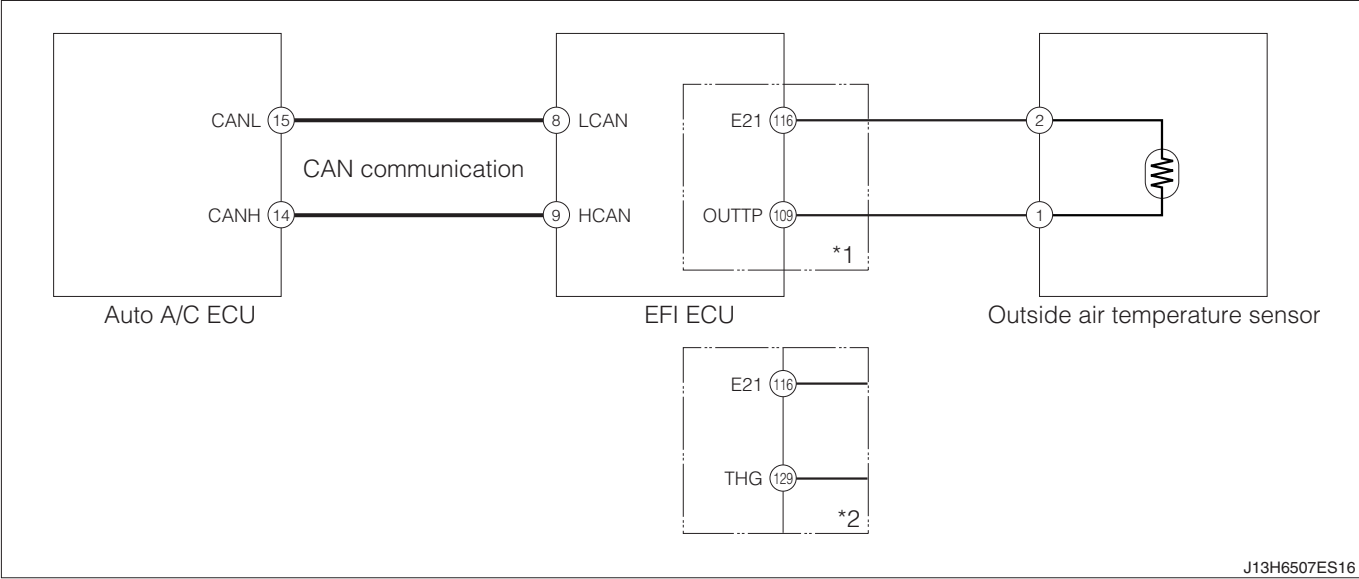
SPECIFIED VALUE: There is conduction between each terminal, and there is no GND short.

▼ If it is OK, end troubleshooting.

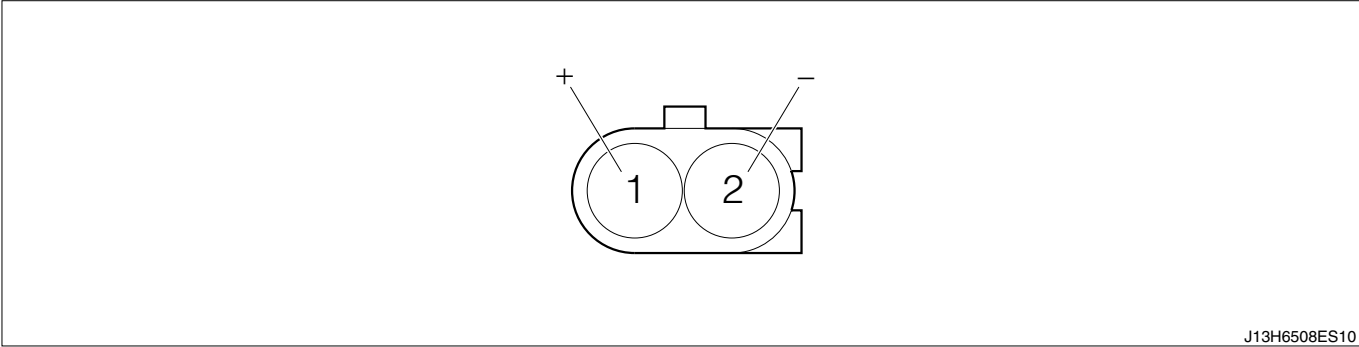
▼ If it is NG, repair or replace the wire harnesses or connectors.

11-12-8 CHECK OF OUTSIDE AIR TEMPERATURE SENSOR SYSTEM

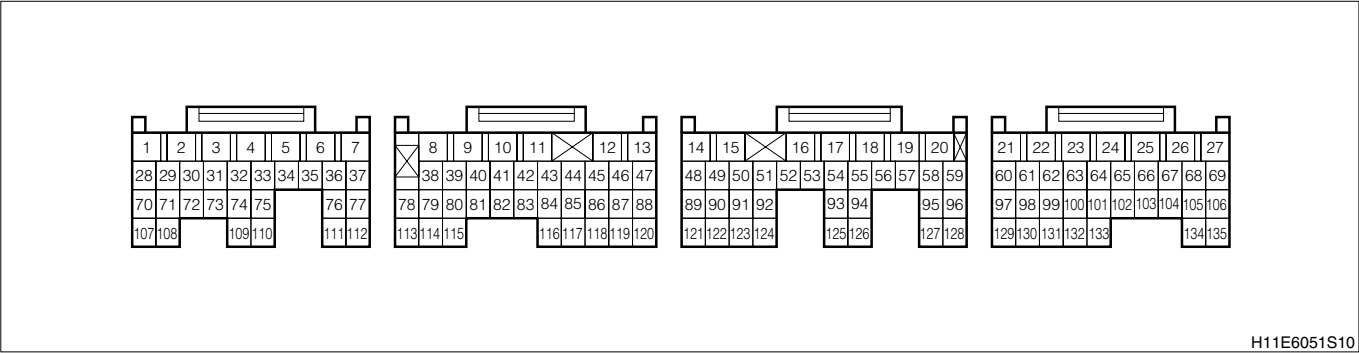
(1) System circuit diagram



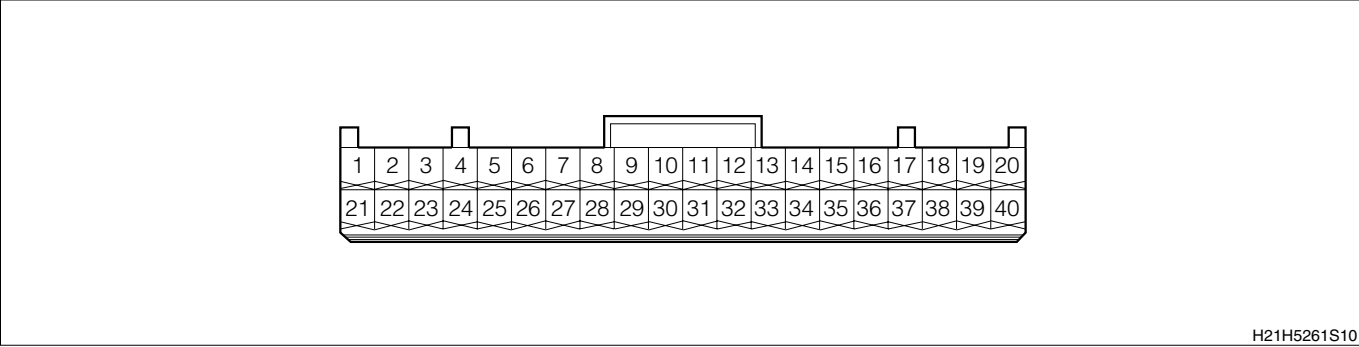
Outside air temperature sensor connected vehicle harness side connector



EFI ECU connected vehicle harness side connector



Auto A/C ECU connected vehicle harness side connector



(2) Checking points

1. Ensure that the CAN communication line is normal.
2. Ensure that outside air temperature sensor is normal.
3. Ensure that the wire harness between the outside air temperature sensor and the EFI ECU is normal.

(3) Checking procedure**▷1. CAN communication basic check**

1. Perform the basic check of the CAN communication.

Refer to Page L2-8.

▼ If it is OK, go to ▷2.

▼ If it is NG, repair or replace the malfunctioning sections.

▷2. Check of diagnosis code

1. Read out the engine related diagnosis codes, using DS-II.

| | |
|---|---|
| A | The diagnosis code "P0070" is output. |
| B | The engine related diagnosis codes other than the above are output. |
| C | No diagnosis code is output. |

▼ For the case A, perform troubleshooting by each diagnosis code (Engine control system).

Refer to Page B8-39.

▼ For the case B, go to the relevant diagnosis code.

Refer to Page B8-31.

▼ For the case C, go to ▷3.

▷3. Unit check of outside air temperature sensor

1. Perform the unit check of the outside air temperature sensor.

Refer to Page K1-81.

▼ If it is OK, go to ▷4.

▼ If it is NG, replace the outside air temperature sensor.

▷4. Wire harness check

1. Check the conduction and GND short for the following wire harnesses.

- (1) Between outside air temperature sensor connected vehicle harness side connector 2 (–) and EFI ECU connected vehicle harness side connector 116 (E21)
- (2) Between outside air temperature sensor connected vehicle harness side connector 1 (+) and EFI ECU connected vehicle harness side connector 109 (OUTTP)(Europe specifications)
- (3) Between outside air temperature sensor connected vehicle harness side connector 1 (+) and EFI ECU connected vehicle harness side connector 129 (THG) (General specifications, China specifications)

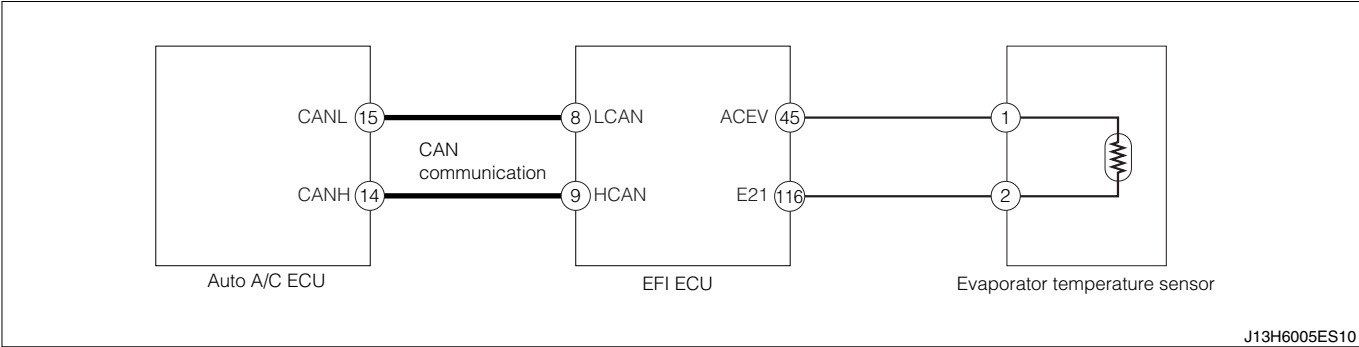
SPECIFIED VALUE: There is conduction between each terminal, and there is no GND short.

▼ If it is OK, end troubleshooting.

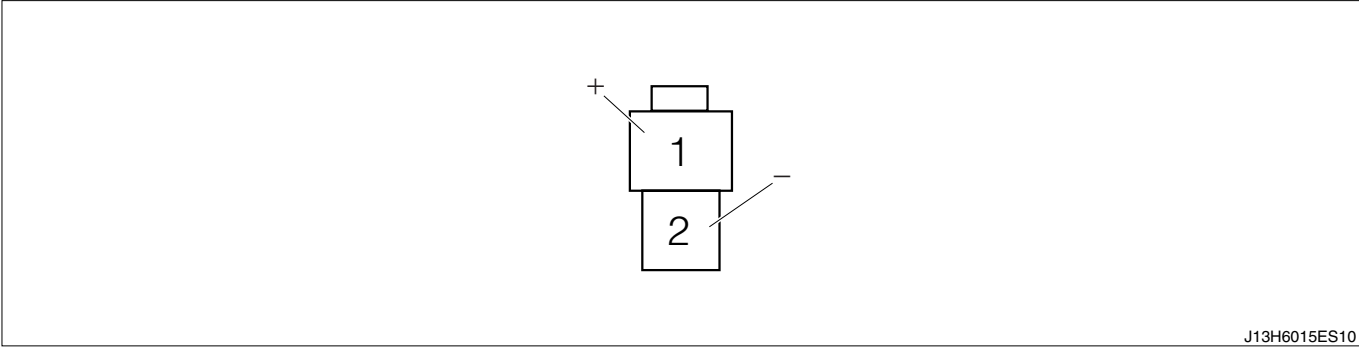
▼ If it is NG, repair or replace the wire harnesses or connectors.

11-12-9 CHECK OF EVAPORATOR TEMPERATURE SENSOR SYSTEM

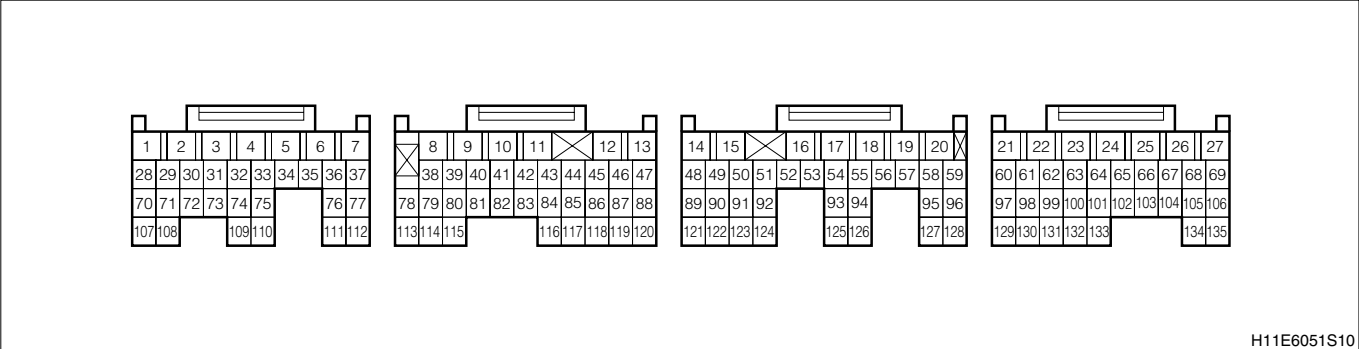
(1) System circuit diagram



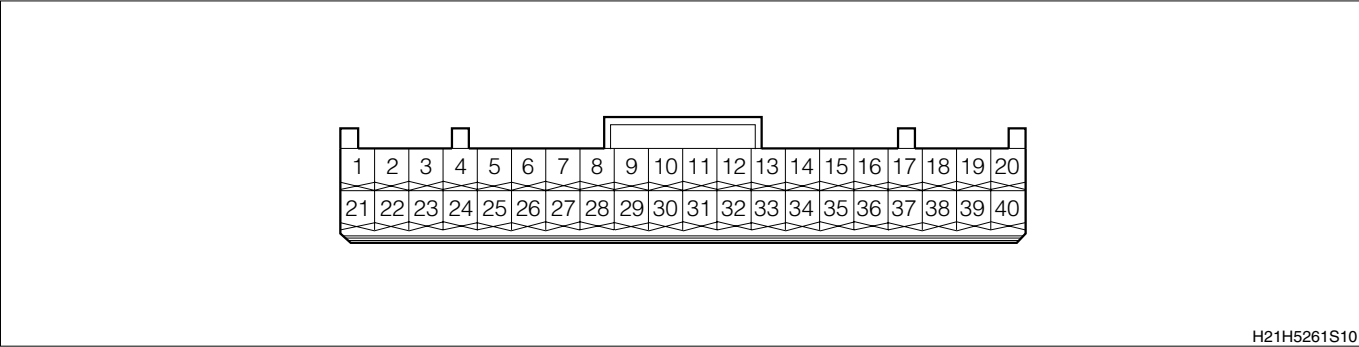
Evaporator temperature sensor connected vehicle harness side connector



EFI ECU connected vehicle harness side connector



Auto A/C ECU connected vehicle harness side connector



(2) Checking points

1. Ensure that the CAN communication line is normal.
2. Ensure that evaporator temperature sensor is normal.
3. Ensure that the wire harness between the evaporator temperature sensor and the EFI ECU is normal.

(3) Checking procedure**▷1. CAN communication basic check**

1. Perform the basic check of the CAN communication.

Refer to Page L2-8.

▼ If it is OK, go to ▷2.

▼ If it is NG, repair or replace the malfunctioning sections.

▷2. Check of diagnosis code

1. Read out the engine related diagnosis codes, using DS-II.

| | |
|---|---|
| A | The diagnosis code "P0535" is output. |
| B | The engine related diagnosis codes other than the above are output. |
| C | No diagnosis code is output. |

▼ For the case A, perform troubleshooting by each diagnosis code (Engine control system).

Refer to Page B8-118.

▼ For the case B, go to the relevant diagnosis code.

Refer to Page B8-31.

▼ For the case C, go to ▷3.

▷3. Unit check of evaporator temperature sensor

1. Perform the unit check of the evaporator temperature sensor.

Refer to TERIOS SERVICE MANUAL

▼ If it is OK, go to ▷4.

▼ If it is NG, replace the evaporator temperature sensor.

Refer to TERIOS SERVICE MANUAL

▷4. Wire harness check

1. Check the conduction and GND short for the following wire harnesses.

- (1) Between evaporator temperature sensor connected vehicle harness side connector 1 (+) and EFI ECU connected vehicle harness side connector 45 (ACEV)
- (2) Between evaporator temperature sensor connected vehicle harness side connector 2 (−) and EFI ECU connected vehicle harness side connector 116 (E21)

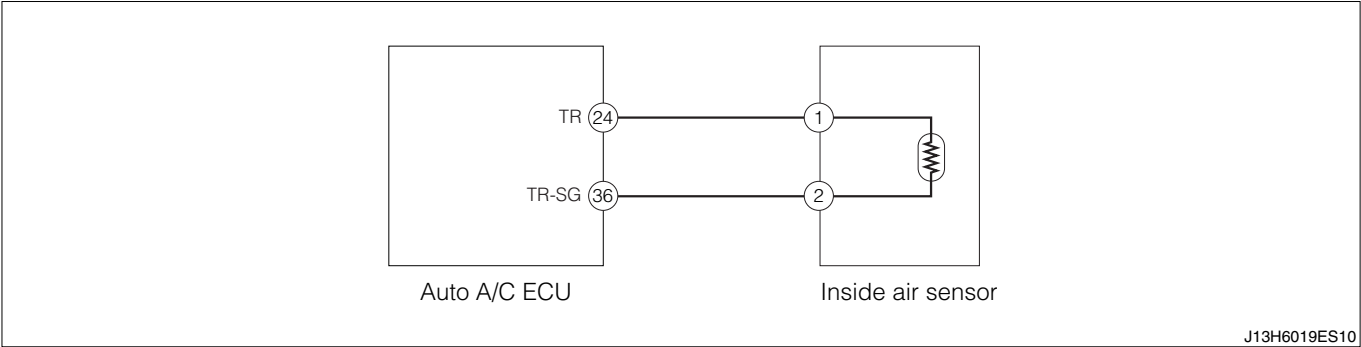
SPECIFIED VALUE: There is conduction between each terminal, and there is no GND short.

▼ If it is OK, end troubleshooting.

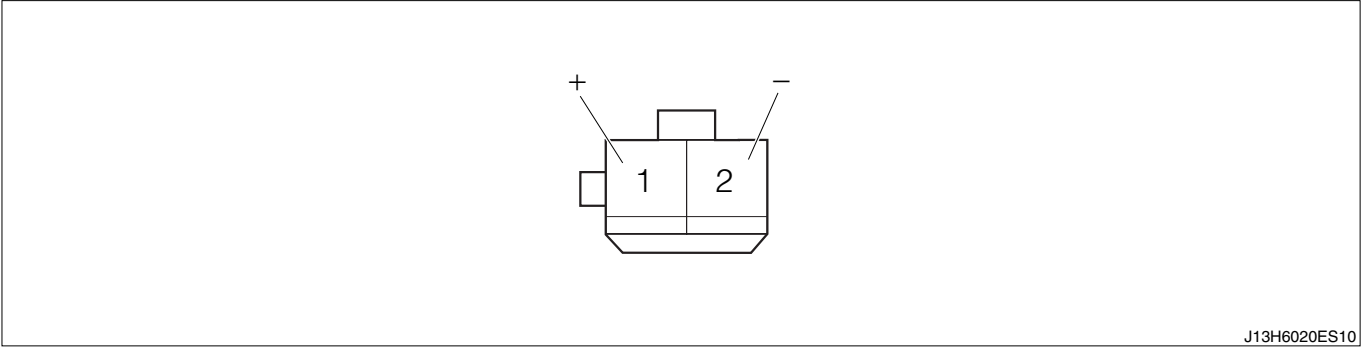
▼ If it is NG, repair or replace the wire harnesses or connectors.

11-12-10 CHECK OF INSIDE AIR SENSOR SYSTEM

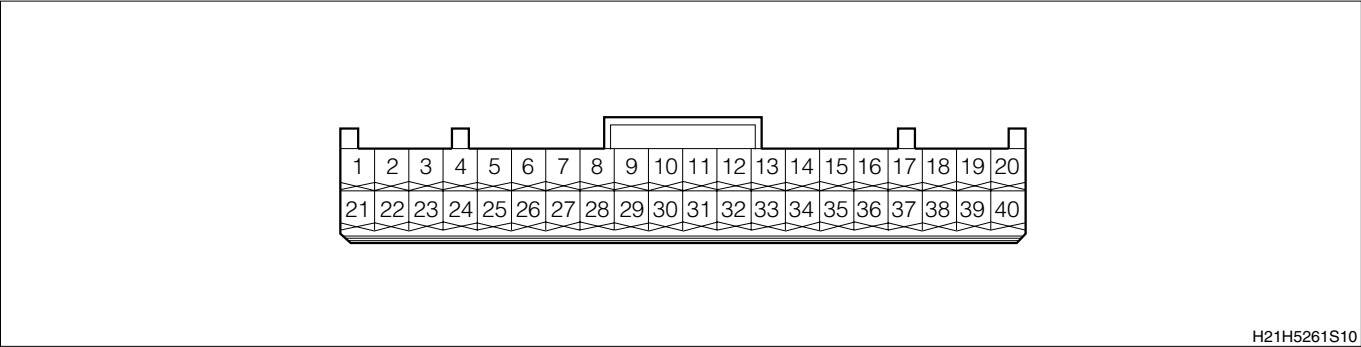
(1) System circuit diagram



Inside air sensor connected vehicle harness side connector



Auto A/C ECU connected vehicle harness side connector



(2) Checking points

1. Ensure that inside air sensor is normal.
2. Ensure that the wire harness between the inside air sensor and the auto A/C ECU is normal.

(3) Checking procedure**▷1. Unit check of inside air sensor**

1. Perform the unit check of the inside air sensor.

Refer to Page K1-81.

▼ If it is OK, go to ▷2.

▼ If it is NG, replace the inside air sensor.

Refer to Page K1-20.

▷2. Wire harness check

1. Check the conduction and GND short for the following wire harnesses.

- (1) Between inside air sensor connected vehicle harness side connector 1 (+) and auto A/C ECU connected vehicle harness side connector 24 (TR)
- (2) Between inside air sensor connected vehicle harness side connector 2 (−) and auto A/C ECU connected vehicle harness side connector 36 (TR-SG)

SPECIFIED VALUE: There is conduction between each terminal, and there is no GND short.

▼ If it is OK, end troubleshooting.

▼ If it is NG, repair or replace the wire harnesses or connectors.

1. Ensure that the voltage for the EFI ECU is normal.
2. Ensure that refrigerant pressure SW is normal.
3. Ensure that the power supply voltage for the refrigerant pressure SW is normal

(3) Checking procedure**▷1. Voltage check of EFI ECU**

1. Disconnect the EFI ECU connector.
2. Set the IG SW to ON, and measure the voltage between the terminals shown below.
 - (1) Between EFI ECU connected vehicle harness side connector 3 (ACSW) and body earth

SPECIFIED VALUE: 10 – 14V

▼ If it is OK, end troubleshooting.

▼ If it is NG, go to ▷2.

▷2. Unit check of refrigerant pressure SW

1. Perform the unit check of the refrigerant pressure SW.

Refer to TERIOS SERVICE MANUAL

▼ If it is OK, go to ▷3.

▼ If it is NG, replace the refrigerant pressure SW.

▷3. Voltage check of refrigerant pressure SW

1. Set the IG SW to ON, and measure the voltage between the terminals shown below.
 - (1) Between refrigerant pressure SW connected vehicle harness side connector 2 (+) and body earth

SPECIFIED VALUE: 10 – 14V

▼ If it is OK, repair or replace the wire harnesses or connectors.

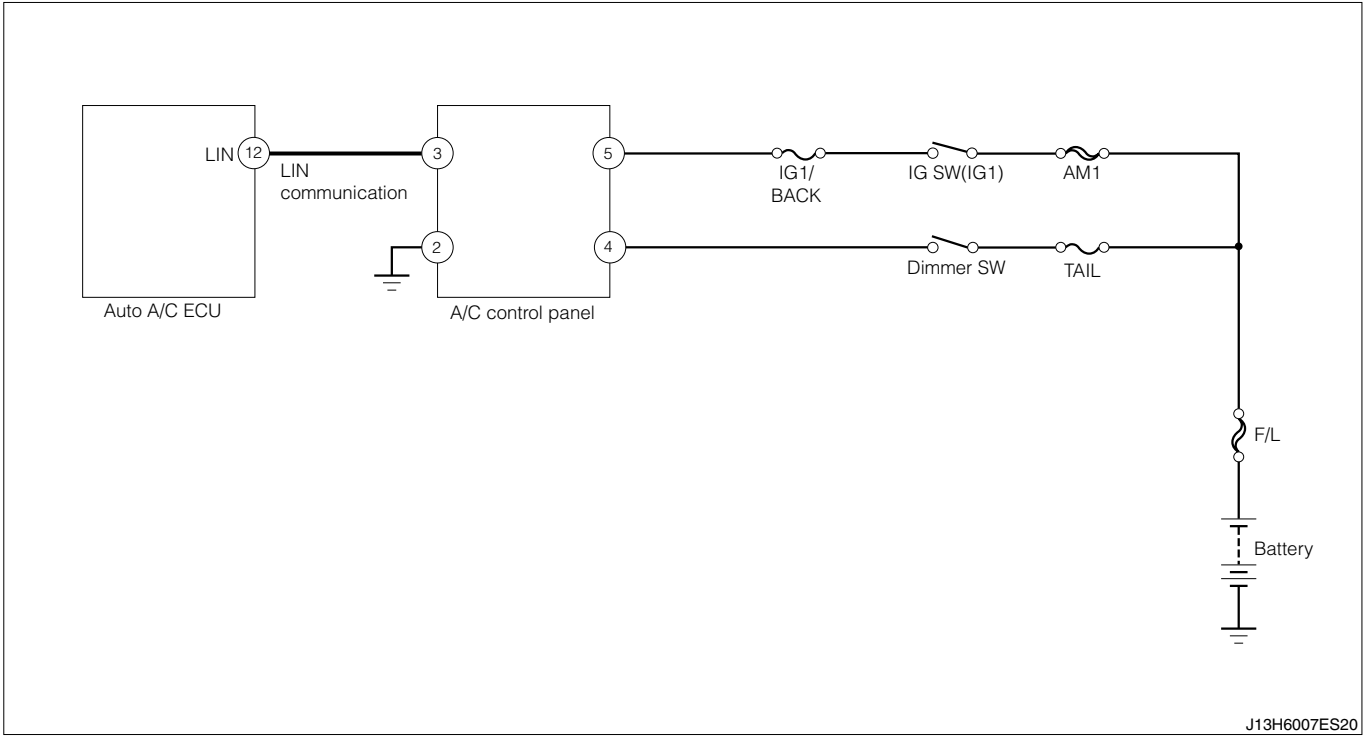
2. Between refrigerant pressure SW and EFI ECU

▼ If it is NG, repair or replace the wire harnesses or connectors.

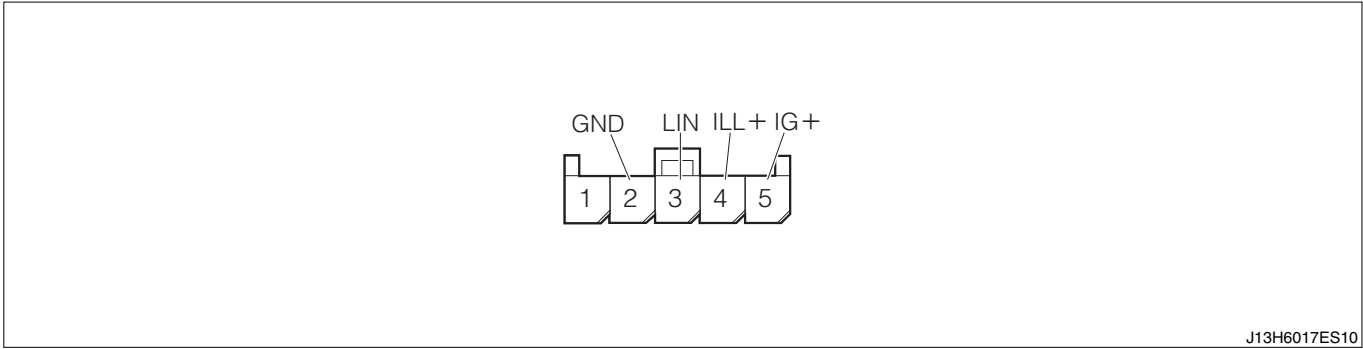
3. Between refrigerant pressure SW and battery

11-12-12 CHECK OF AIR CONDITIONER CONTROL PANEL SYSTEM

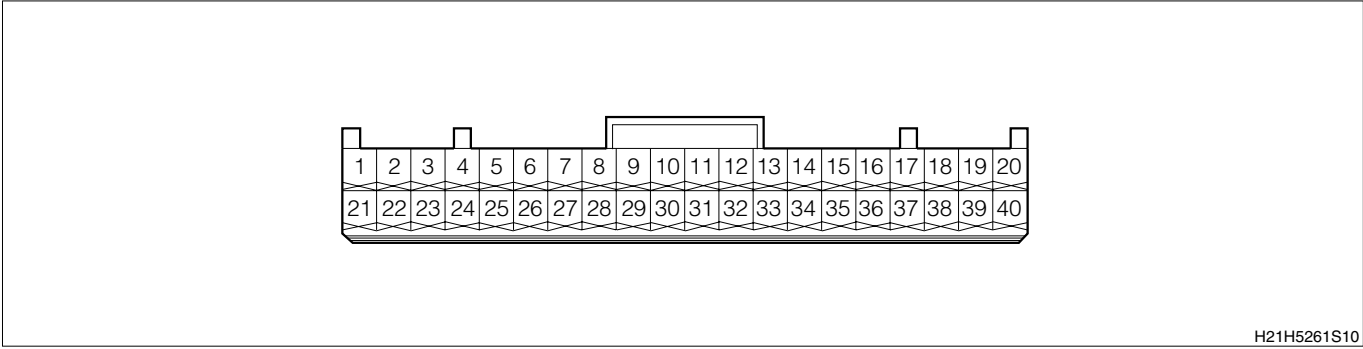
(1) System circuit diagram



Air conditioner control panel connected vehicle harness side connector



Auto A/C ECU connected vehicle harness side connector



(2) Checking points

1. Ensure that the power supply voltage for the air conditioner control panel is normal.
2. Ensure that the wire harness between the air conditioner control panel and the body earth is normal.
3. Ensure that the wire harness between the air conditioner control panel and the auto A/C ECU is normal.

(3) Checking procedure**▷1. Voltage check of air conditioner control panel (Illumination system)**

1. Set the dimmer SW to TAIL, and measure the voltage between the terminals shown below.

- (1) Between air conditioner control panel connected vehicle harness side connector 4 (ILL+) and body earth

SPECIFIED VALUE: 10 – 14V

▼ If it is OK, go to ▷2.

▼ If it is NG, repair or replace the wire harnesses or connectors.

▷2. Voltage check of air conditioner control panel (Power supply system)

1. Set the IG SW to ON, and measure the voltage between the terminals shown below.

- (1) Between air conditioner control panel connected vehicle harness side connector 5 (IG+) and body earth

SPECIFIED VALUE: 10 – 14V

▼ If it is OK, go to ▷3.

▼ If it is NG, repair or replace the wire harnesses or connectors.

▷3. Wire harness check (1)

1. Check the conduction of the following wire harnesses.

- (1) Between air conditioner control panel connected vehicle harness side connector 2 (GND) and body earth

SPECIFIED VALUE: Conduction

▼ If it is OK, go to ▷4.

▼ If it is NG, repair or replace the wire harnesses or connectors.

▷4. Wire harness check (2)

1. Check the conduction and GND short for the following wire harnesses.

- (1) Between air conditioner control panel connected vehicle harness side connector 3 (LIN) and auto A/C ECU connected vehicle harness side connector 12 (LIN)

SPECIFIED VALUE: There is conduction between each terminal, and there is no GND short.

▼ If it is OK, go to ▷5.

▼ If it is NG, repair or replace the wire harnesses or connectors.

▷5. Replacement with normal air conditioner control panel

1. Replace the air conditioner control panel with a new one or a one that has been accepted as normal.

2. Confirm the operation of the replaced air conditioner control panel.

SPECIFIED VALUE: Operates properly.

▼ If it is OK, the troubleshooting has been finished. (Malfunction of the air conditioner control panel)

▼ If it is NG, air conditioner control panel system is normal.

11-13 UNIT CHECK

11-13-1 REFRIGERANT PRESSURE SW

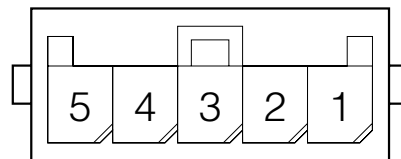
Refer to TERIOS SERVICE MANUAL

11-13-2 AIR CONDITIONER CONTROL PANEL

(1) Check of illumination

1. Check the illumination status of the SW while connecting the positive battery terminal to Terminal 4 and the negative battery terminal of the battery to Terminal 2.

SPECIFIED VALUE: The SW illuminates



J13H6008T10

11-13-3 INSIDE/OUTSIDE AIR DOOR SWITCHING SERVO MOTOR

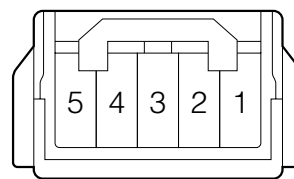
1. Check that the function of the inside/outside air door switching servo motor while connecting a positive terminal of 5 voltage to Connector terminal 4 (REC) and a negative terminal to Connector terminal 5 (FRS).

SPECIFIED VALUE: The arm rotates to REC position smoothly.

CAUTION

- Be careful not to increase over 5 V.
 - Turn the power off smoothly, when the arm rotates till REC position.
2. Check that the function of the inside/outside air door switching servo motor while connecting a positive terminal of to Connector terminal 5 (FRS) and a negative terminal of to Connector terminal 4 (REC).

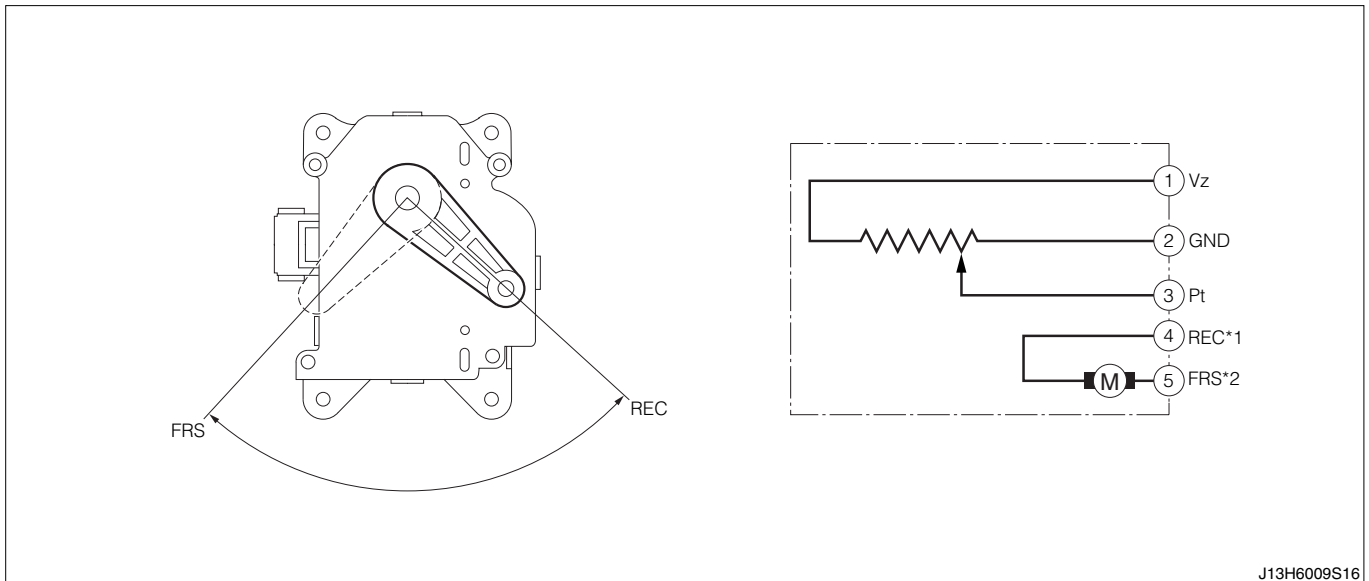
SPECIFIED VALUE: The arm rotates to FRS position smoothly.



M21H5085T10

CAUTION

- Be careful not to increase over 5 V.
- Turn the power off smoothly, when the arm rotates till FRS position.



J13H6009S16

The illustration shows a typical example.

*1:Rotating to REC side at positive terminal connection.

*2:Rotating to FRS side at positive terminal connection.

(1) Check of resistance value

1. Measure the resistance values between Connector terminals 2 and 3 when the arm is in FRS position and in REC position.

SPECIFIED VALUE: FRS position: 0.6 — 1.2 k Ω (Room temperature)

REC position: 3.6 — 6.7 k Ω (Room temperature)

2. During the rotation of the arm, the resistance value between Connector terminals 2 and 3 changes continuously.

11-13-4 MODE DOOR SWITCHING SERVO MOTOR

(1) Operation check

1. Check that the function of the mode door switching servo motor while connecting a positive terminal of 5 voltage to Connector terminal 5 (DEF) and a negative terminal of to Connector terminal 4 (FACE).

SPECIFIED VALUE: The arm rotates to DEF position smoothly.

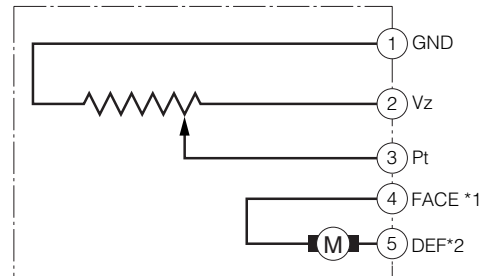
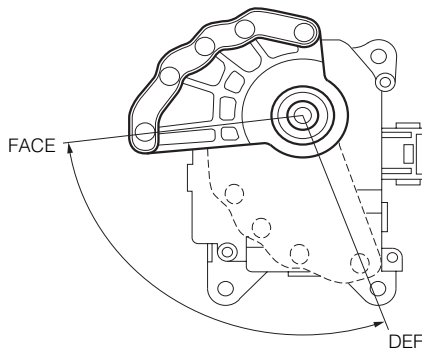
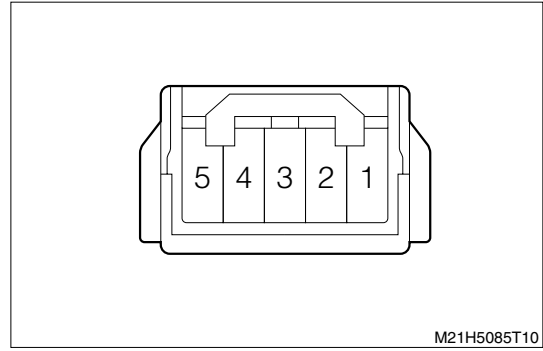
CAUTION

- Be careful not to increase over 5 V.
 - Turn the power off smoothly, when the arm rotates till DEF position.
2. Check that the function of the mode door switching servo motor rotates from the FACE position to the DEF position while connecting a positive terminal of 5 voltage to Connector terminal 4 (FACE) and a negative terminal to Connector terminal 5 (DEF).

SPECIFIED VALUE: The arm rotates to FACE position smoothly.

CAUTION

- Be careful not to increase over 5 V.
- Turn the power off smoothly, when the arm rotates till FACE position.



J13H6010S16

The illustration shows a typical example.

*1:Rotating to FACE side at positive terminal connection.

*2:Rotating to DEF side at positive terminal connection.

(2) Check of resistance value

1. Measure the resistance values between Connector terminals 2 and 3 when the arm is in FACE position and in DEF position.

SPECIFIED VALUE: FACE position: 0.8 — 1.6 k Ω (Room temperature)

DEF position: 3.6 — 6.8 k Ω (Room temperature)

NOTE

- During the rotation of the arm, the resistance value between Connector terminals 2 and 3 changes continuously.

11-13-5 AIR MIXTURE DOOR SWITCHING SERVO MOTOR

(1) Operation check

1. Check the function of the air mixture door switching servo motor while connecting a positive terminal of 5 voltage to Connector terminal 4 (COOL) and a negative terminal to Connector terminal 5 (HOT).

SPECIFIED VALUE: The arm rotates to **MAX COOL** position smoothly.

CAUTION

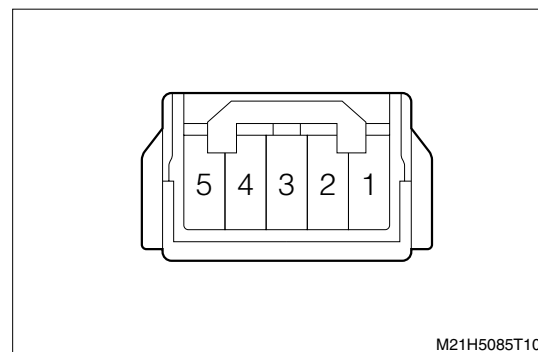
- Be careful not to increase over 5 V.
- Turn the power off smoothly, when the arm rotates till **MAX COOL** position.

2. Check the function of the air mixture door switching servo motor while connecting a positive terminal of 5 voltage to Connector terminal 5 (HOT) and a negative terminal to Connector terminal 4 (COOL).

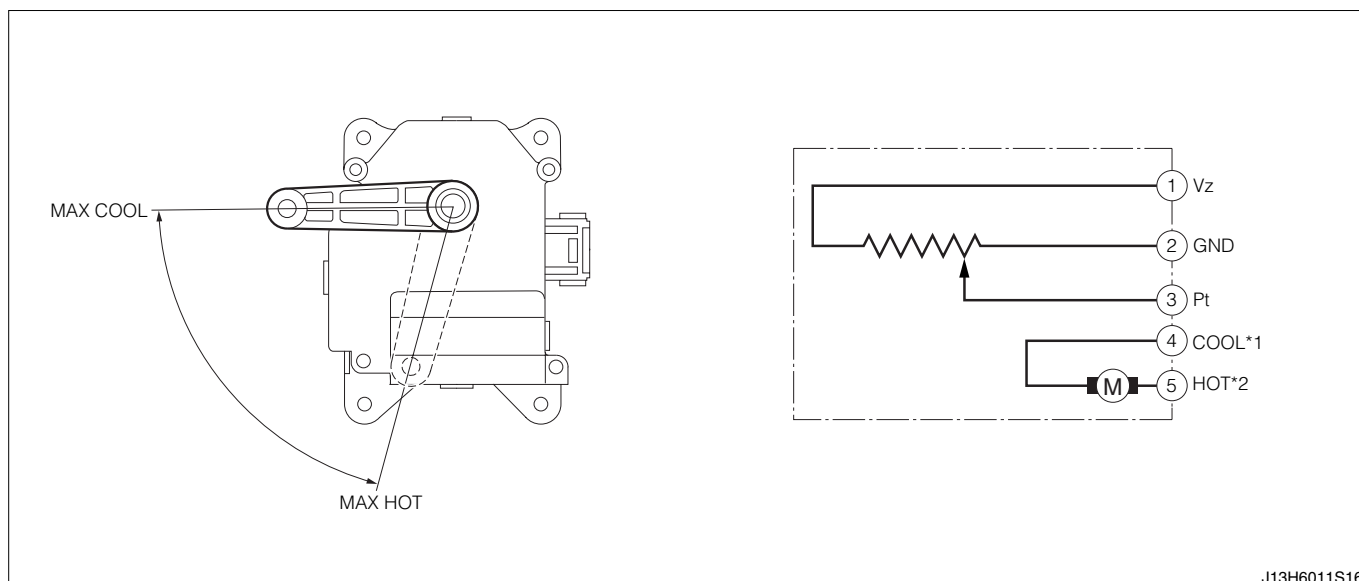
SPECIFIED VALUE: The arm rotates to **MAX HOT** position smoothly.

CAUTION

- Be careful not to increase over 5 V.
- Turn the power off smoothly, when the arm rotates till **MAX HOT** position.



M21H5085T10



J13H6011S16

*1:Rotating to MAX COOL side at positive terminal connection.

*2:Rotating to MAX HOT side at positive terminal connection.

(2) Check of resistance value

1. Measure the resistance values between Connector terminals 2 and 3 when the arm is in MAX COOL position and in MAX HOT position.

SPECIFIED VALUE: **MAX HOT position:** 0.6 — 1.2 k Ω (Room temperature)

MAX COOL position: 3.6 — 6.7 k Ω (Room temperature)

NOTE

- During the rotation of the arm, the resistance value between Connector terminals 2 and 3 changes continuously.

K1-81

11-13-6 BLOWER MOTOR

Refer to TERIOS SERVICE MANUAL

11-13-7 BLOWER MOTOR CONTROLLER

(1) Operation check

1. Connect the positive terminal of the battery to Connector terminal 3 of the blower motor controller with interposing a 12V-3.4W bulb and the negative terminal of the battery to Connector terminal 1 of the blower motor controller.
2. Check the bulb lighting status when Connector terminal 2 is connected to the positive terminal of the battery.

SPECIFIED VALUE: The bulb illuminates

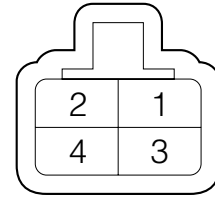
CAUTION

- End the check in a short period.

(2) Check of resistance value

1. Check the resistance value between Terminals 3 and 4

SPECIFIED VALUE: Approximately 1.5 k Ω (Room temperature)



K11H8051T10

11-13-8 COMPRESSOR MAGNET CLUTCH

Refer to TERIOS SERVICE MANUAL

11-13-9 INSIDE AIR SENSOR

1. Check the resistance value between the connector terminals of the inside air sensor.

SPECIFIED VALUE: 1.6 – 1.8k Ω (25°C)

11-13-10 OUTSIDE AIR TEMPERATURE SENSOR

1. Check the resistance value between the connector terminals of the outside air temperature sensor.

SPECIFIED VALUE: 1.6 – 1.8k Ω (25°C)

11-13-11 WATER TEMPERATURE SENSOR

Refer to TERIOS SERVICE MANUAL

11-13-12 INSOLATION SENSOR

1. Measure the resistance values between the connector terminals while connecting the positive terminal of the electrical tester to Connector terminal 2 of the insolation sensor and the negative terminal of the electrical tester to Connector terminal 1 of the insolation sensor, and then covering the sensor so that it will not be exposed in direct sunlight using a piece of cloth.

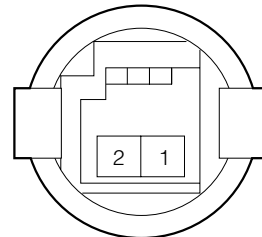
SPECIFIED VALUE: $\infty \Omega$ (No conduction)

2. Measure the resistance values between the connector terminals, when light shines into the insolation sensor with the distance of 30cm or less, while connecting the positive terminal of the electrical tester to Connector terminal 2 of the insolation sensor and the negative terminal of the electrical tester to Connector terminal 1 of the insolation sensor.

SPECIFIED VALUE: Other than $\infty \Omega$

CAUTION

- The insolation sensor may not function if the light is weak. Be sure to measure the resistance value with using a fluorescent or an incandescent light and close it to the sensor for 30cm or less.



A21E6329AT10

11-13-13 EVAPORATOR TEMPERATURE SENSOR

Refer to TERIOS SERVICE MANUAL

11-13-14 A/C RELAY

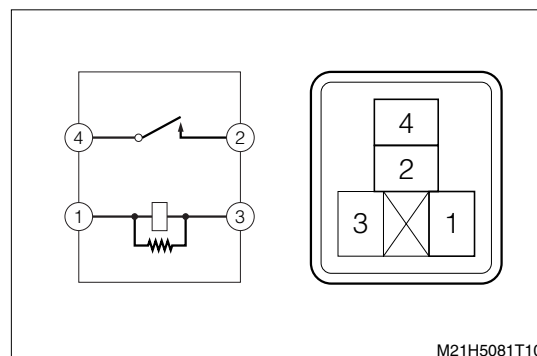
1. Check the conduction between each terminal of the connector.

| Terminal No. | Standard |
|--------------|---------------|
| 2 – 4 | No conduction |
| 1 – 3 | Conduction |

2. Check the conduction between Terminals 2 and 4 when the battery voltage is applied between Terminals 1 and 3.

SPECIFIED VALUE: Conduction**11-13-15 HEATER RELAY**

Refer to TERIOS SERVICE MANUAL



11-14 ECU INPUT/OUTPUT SIGNAL CHECK

11-14-1 CHECKING METHOD

1. Check the voltage and conduction between each connector terminal.

CAUTION

- With the connector being connected, perform the check from the back of the vehicle harness side connector.

11-14-2 SPECIFIED VALUE FOR INPUT/ OUTPUT SIGNAL

(1) Engine control computer (EFI ECU)

| Checking system | Terminal No. (Terminal name) | Input and output | Item | Measurement condition | Specified value |
|--------------------------------|-------------------------------------|------------------------|---------|-------------------------------------|---------------------------|
| Magnet clutch | 36(MGC) – 125(E1) | Output | Voltage | Magnet clutch ON | 1V or less |
| | | | | Magnet clutch OFF | 10 – 14V |
| Air conditioner SW | 3(ACSW) – 125(E1) | Input | Voltage | When the IG SW is turned to ON. | 10 – 14V |
| Blower | 42(BLW) – 125(E1) | Input | Voltage | Blower ON | 1V or less |
| | | | | Blower OFF | 10 – 14V |
| Evaporator temperature sensor | 45(ACEV) – 116(E21) | Input | Voltage | Air conditioner ON | 0.1 – 4.85V |
| Water temperature sensor | 54(THW) – 19(E2) | Input | Voltage | Water temperature 60 to 120°C | 0.3 – 1.3V |
| Outside air temperature sensor | 109(OUTTP) – 116(E21)* ¹ | Input | Voltage | Outside air temperature: 25→40°C | 1.3 – 1.8V→ 0.8 – 1.3V |
| | 129(THG) – 116(E21)* ² | | | | |

*1: Europe specifications

*2: General specifications, China specifications

(2) Automatic air conditioner ECU

| Checking system | Terminal No. (Terminal name) | Input and output | Item | Measurement condition | Specified value |
|---|---------------------------------|------------------------|------------|--|--|
| Blower motor Controller | 26(VM)–32(GND) | Input | Voltage | Mode of Blower: AUTO LO→HI | Approx. 9V→ 1V or less |
| | 6(BLW)–32(GND) | Output | Voltage | Turn the IG SW to ON, and turn the blower SW to ON | 2–5V |
| Air mixture door switching servo motor | 40(AMC)–32(GND) | Output | Voltage | Temperature adjustment: MAX HOT→MAX COOL | 1V or less→ 10–14V |
| | 39(AMH)–32(GND) | Output | Voltage | Temperature adjustment: MAX COOL→MAX HOT | 1V or less→ 10–14V |
| | 31(TP-S5)–34(TP-SG) | Power supply | Voltage | When the IG SW is turned to ON. | 4.5–5.5V |
| | 23(TP)–34(TP-SG) | Input | Voltage | Temperature adjustment: MAX HOT→MAX COOL | 0.6–1.4V→ 3.6–4.4V |
| | 34(TP-SG)–32(GND) | GND | Conduction | At all times | Conduction |
| Mode door switching servo motor | 19(AOD)–32(GND) | Output | Voltage | Mode of Air outlet ports: FACE→DEF | 1V or less→ 10–14V |
| | 20(AOF)–32(GND) | Output | Voltage | Mode of Air outlet ports: DEF→FACE | 1V or less→ 10–14V |
| | 10(TPO-S5)–35(TPO-SG) | Power supply | Voltage | When the IG SW is turned to ON. | 4.5–5.5V |
| | 4(TPO)–35(TPO-SG) | Input | Voltage | Mode of Air outlet ports: FACE→DEF | 0.6–1.4V→ 3.6–4.4V |
| | 35(TPO-SG)–32(GND) | GND | Conduction | At all times | Conduction |
| Inside/outside air door switching servo motor | 37(REC)–32(GND) | Output | Voltage | Mode of Intake port: FRESH→RECIRC | 10–14V→ 1V or less |
| | 38(FRS)–32(GND) | Output | Voltage | Mode of Intake port: RECIRC→FRESH | 10–14V→ 1V or less |
| | 11(TPI-S5)–13(TPI-SG) | Power supply | Voltage | When the IG SW is turned to ON. | 4.5–5.5V |
| | 3(TPI)–13(TPI-SG) | Input | Voltage | Mode of Intake port | 0.6–1.4V→ 3.6–4.4V |
| | 13(TPI-SG)–32(GND) | GND | Conduction | At all times | Conduction |
| Power supply | 1(IG)–32(GND) | Power supply | Voltage | When the IG SW is turned to ON. | 10–14V |
| | 21(+B)–32(GND) | Power supply | Voltage | At all times | 10–14V |
| Earth | 32(GND) to Body earth | GND | Conduction | At all times | Conduction |
| Heater relay | 17(HR)–32(GND) | Output | Voltage | Blower: OFF→ON | 10–14V→ 1V or less |
| Inside air sensor | 24(TR)–36(TR-SG) | Input | Voltage | Inside air temperature: 25→40℃ | 1.8–2.2V→ 1.2–1.6V |
| | 36(TR-SG)–32(GND) | GND | Conduction | At all times | Conduction |
| Insolation sensor | 5(TS-SG)–30(TS) | Input | Voltage | Insolation sensor section when the IG SW is turned to ON (Shadow area→Sunny area or a fluorescent or a incandescent light into the sensor) | Approx.0.8V → Changes according to the intensity of the light. |